Report No.: J078-SIP
Rev. No.: 0
Work Assignment No.: 019-2JZZ
Contract No.: 68-W9-0051
September 30, 1992

✓ A9B
12/26/92
SEA

Ms. Sandy Foose
U.S. Environmental Protection Agency
Region 2
Edison, New Jersey 08837

Re: Murray Hill Parkway Site Inspection Prioritization Evaluation

Dear Ms. Foose:

The following is a summary of the Site Inspection Prioritization evaluation for the Murray Hill Parkway Site (CERCLIS ID No. NJD980769327) located on Murray Hill Parkway in East Rutherford, New Jersey. This site is also listed in CERCLIS as United States Printing Ink (CERCLIS ID No. NJD095171948) (Ref. No. 1).

General Description and Site History

The Murray Hill Parkway Site (MHPS) is located in an industrial area of East Rutherford, Bergen County, New Jersey. U.S. Printing Ink (USPI), has operated on site from 1961 to the present. USPI manufactures colored and black inks, primarily for the newspaper industry. These inks have an oil and varnish medium (Ref. No. 9, p. 42). The site is owned by Millmaster Onyx Group Kewanee Ind. Inc. (Ref. No. 9, p. 29).

In 1980 USPI completed and submitted a RCRA Part A application as a generator, and treatment, storage, and disposal facility (TSDF) under EPA ID No. NJD095171948. Contaminants listed as being present in their waste included barium, chromium, and lead (Ref. No. 9, pp. 26-30). The facility also has several air permits and was permitted under the New Jersey Pollutant Discharge Elimination System (NJPDES) to discharge noncontact roller mill water to Berrys Creek (Ref. No. 9, pp. 46-52).

During a hazardous waste investigation conducted by the New Jersey Department of Environmental Protection in October 1980, it was reported that approximately 200 drums of ink were stored outside on a permeable surface and that many drums were in poor condition or lacking tops. Directly behind the drum storage area was a dry streambed. The vegetation in the stream was stained black. Black sludge was noted near and on the stream bank. The off-site migration of waste appeared to be a result of storm runoff. Samples of the waste substances were collected; however, the results of their analyses were not available. A small area containing construction/demolition debris was also observed during this inspection. From this investigation, a recommendation that a Notice of Prosecution for disposing of solid and hazardous waste was made (Ref. No. 9, pp. 42-45). On September 16, 1981, the NJDEP again inspected the USPI facility and reported that general housekeeping was poor and that spills of various colors from drums and leaking tank trucks were seen throughout the site. The spills were reported to be being spread by rain water (Ref. No. 9, pp. 35-40).

On August 21, 1986, a site inspection of the USPI site was conducted by the NJDEP, during which five soil, two surface water, and two sediment samples were collected from near and in the adjacent streambed (Ref. No. 10, pp. 1, 16). Analytical results from these samples indicated the presence of Aroclor-1254 at a concentration of 1,526 micrograms per kilogram (ug/kg) in one on-site soil sample (Ref. No. 10, p. 18).

Evaluation of Existing Information

Existing information and analytical data, primarily from the 1986 NJDEP Site Inspection Report and the 1990 U.S. EPA Region 2 FIT Preliminary Assessment Report and supporting documentation files, were used to do an initial evaluation of the site. This evaluation indicated the exposure route of concern to be the surface water migration pathway. Analytical results indicated that there is a potential for contaminants to migrate to a wetland located approximately 400 feet northwest of the site via a drainage ditch that is located adjacent to the site.

Hazard Assessment

Updated, additional information, and analytical data were collected to further evaluated the site to determine whether further CERCLA remedial action is required. This information included groundwater usage and populations within a 4-mile radius, identification of potential surface water intakes and population served, surface flow characteristics, and identification of fisheries and sensitive environments. Analytical data from a sampling event conducted on July 15, 1992 was also used to determine the presence of contaminants and their potential impact along the surface migration pathway. All samples collected were analyzed under U.S. EPA Contract Laboratory Program (CLP) protocol for Target Compound List (TCL) organic contaminants and Target Analyte List (TAL) inorganic contaminants. (Details of the 7/15/92 sampling event and analytical results are presented in Ref. No. 12).

Groundwater Migration Pathway - There are no analytical results to indicate if a release of contaminants to groundwater has occurred. There is a potential for a release of contaminants to groundwater as Aroclor-1254 and several metals were detected in soil samples collected on site by NJDEP in 1986. The aquifer of concern is the Passaic Formation (previously known as the Brunswick Formation). The Passaic Formation is composed of layers of siltstone, sandstone, and conglomerate that have a combined thickness of over 6,000 meters (Ref. No. 9, p. 68). The Passaic Formation in the area of the site is overlain by fill which was deposited into a wetland area to form the facility property (Ref. No. 11). The hydraulic conductivity of the unit and the fill is estimated to be approximately 10^{-4} to 10^{-6} cm/sec (Ref. No. 4). The depth to groundwater, based on the static water level of a nearby industrial well, is approximately 14 feet (Ref. No. 9, p. 174). The only known drinking water sources within 4 miles of the site are one residential well in Wallington (located approximately 2.6 miles from the site), and one well that is available to the 27,000 residents of Nutley for bottling, if they so choose. All towns within a 4 mile radius of the site (including Nutley and Wallington are served by public water companies whose sources are outside of the 4 mile target distance. Wells within 4 miles of the site serve an approximate population of 27,003 people (0-¼ mile: 0; ¼-½ mile: 0; ½-1 mile: 0; 1-2 miles: 0; 2-3 miles: 3; 3-4 miles: 27,000) (Ref. No. 3). There is no wellhead protection area presently delineated in the state of New Jersey (Ref. No. 2). Groundwater within 4 miles of the site is also used for commercial and irrigation purposes (Ref. No. 9, p. 176).

Surface Water Migration Pathway - Analytical results from the NJDEP 1986 site inspection and subsequent July 1992 sampling event indicate that there is a potential for a release of contaminants to surface water. Aroclor-1254 was detected in on-site soil during the 1986 site inspection at a concentration of 1,526 ug/kg. Lead and zinc were also found in on-site soils at 426 mg/kg and 568 mg/kg, respectively (Ref. No. 10, pp. 18, 88). Aroclor-1254 was also detected in sediment samples in the drainage ditch adjacent to the site and in a sediment sample collected from a downstream wetland located approximately 400 feet from the site during the July 1992 sampling event; however, actual contamination could not be documented at this time, as Quality Assurance/Quality Control (QA/QC) findings from this data preclude accurate quantification of contaminant concentrations. PCBs are not reported to be attributable to the site and there was no detection of attributable substances during the 1992 sampling event (Ref. No. 12). The nearest downslope surface water, Berrys Creek, is located approximately 0.3 mile southeast of the site (Ref. No. 7). This creek is not designated as a fishery (Ref. No. 15). Berrys Creek flows into the Hackensack River which in turn flows into the Newark Bay (Ref. No. 8). The state endangered species least tern (*Sterna antillarum*) and salt marsh bulrush (*Scirpus maritinus*) are reported to exist on or in the immediate vicinity of these waterways. The shortnose sturgeon (*Acipenser breviostrum*), a federally listed endangered species also inhabits the waterways within 15 miles of the site. No other known federally or state listed threatened or endangered species are reported to exist within 15 miles downstream of the site (Ref. No. 5). Approximately 11.9 miles of estuarine wetlands are contiguous with the waterways that are located within 15 miles downstream of the site (Ref. No. 8). The site is located in a 100-year floodzone (Ref. No. 13). Hackensack River and Newark Bay have a ban on the consumption and sale of all fish species; however, access is not restricted and these may be used as recreational fisheries (Ref. No. 14). There are no known surface water intakes used for drinking purposes within the 15 mile surface water pathway (Ref. No. 3).

<u>Soil Exposure Pathway</u> - Analytical results from the 1986 NJDEP site inspection indicate that there is on-site soil contamination. Aroclor-1254 was detected at a concentration of 1,526 ug/kg during the 1986 site inspection. No significant concentration of contaminants were detected in on-site soil during the July 15, 1992 sampling event (Ref. No. 12). There is no residence, school, or day care center within 200 feet of the site; however, there are approximately 90 workers on site (Ref. No. 6). The area where wastes were reported to be stored is enclosed by a fence which apparently is locked during the off-hours (Ref. No. 11). No known terrestrial sensitive environment is located on an area of soil contamination (Ref. No. 5).

<u>Air Migration Pathway</u> - There are no analytical data to determine if a release of contaminants to air has occurred. There is a potential for air particulate migration, as Aroclor-1254 was detected in on-site soil at a concentration of 1,526 ug/kg (Ref. No. 10, p. 18). The heavy vegetation on site would reduce the potential for particulate releases (Ref. No. 11). The nearest population is a residential area located approximately 0.5 mile west of the site (Ref. No. 7). There are approximately 262,690 people living within a 4-mile radius of the site (0-¼ mile, 0; ¼-½ mile, 410; ½-1 mile, 7,660; 1-2 miles, 43,270; 2-3 miles, 69,570; 3-4 miles, 141,780) (Ref. No. 6). The nearest sensitive environment is a wetland located approximately 400 feet northwest of the site. There are approximately 33 acres of wetlands within 0 to 0.25 mile of the site and 81 acres of wetlands within 0.25 to 0.5 mile of the site (Ref. No. 8).

Summary

The existing information, data, and additional information collected were sufficient to evaluate the site. This assessment indicates that there is a minimal impact to human and environmental receptors applicable to each pathway evaluation because of the significant distance from the site to those receptors. The recent sampling results indicate no significant concentration of any contaminant attributable to site activities.

Very truly yours,

Richard M. Ettinger for
Dennis J. Foerter
SITE MANAGER

Anthony F. Culmone, Jr.
Anthony F. Culmone, Jr.
PROJECT MANAGER

Ronald M Naman
Ronald M. Naman
SUBCONTRACT OFFICE MANAGER

Dennis Stainken
Dennis Stainken, Ph.D.
WORK ASSIGNMENT MANAGER

This Report was conducted under the following USEPA Documentation Procedure

Guidance for Performing Site Inspections Under CERCLA Draft Publication 9345.1-0

ATTACHMENT 1

REFERENCES

1. U.S. Environmental Protection Agency (U.S. EPA) Superfund Program, Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS), List-4: Site Alias Location Listing, pp. 188, 189, 275, 276, August 3, 1992, and List-8: Site/Event Listing, pp. 167, 245, August 3, 1992.

2. Telecon Note: Conversation between Dan Van Abs, NJDEPE, Bureau of Water Supply Planning, and K. Campbell, HALLIBURTON NUS Environmental Corporation, February 14, 1992.

3. Project Note: From D. Foerter, HALLIBURTON NUS Environmental Corporation, to Murray Hill Parkway Site File (J078SP), Subject: Groundwater use within 4 miles of Murray Hill Parkway Site, September 18, 1992.

4. Hazard Ranking System; Final Rule, 40 Code of Federal Regulations Part 300. Federal Register, Volume 55, No. 241, p. 51601, December 14, 1990.

5. Project Note: From R. Settino, HALLIBURTON NUS Environmental Corporation, to Murray Hill Parkway Site File (J078SP), Subject: Sensitive Environments within 15 miles downstream of site, October 6, 1992.

6. Project Note: From D. Foerter, HALLIBURTON NUS Environmental Corporation, to Murray Hill Parkway Site File (J078SP), Subject: General Information (Murray Hill Parkway Site, September 25, 1992.

7. Four Mile Vicinity Map for the Murray Hill Parkway Site, compiled from U.S. Department of the Interior, Geological Survey Topographic Maps, 7.5 minute series, Quadrangles of "Weehawken, NJ-NY," 1967, photorevised 1981; "Orange, NJ," 1955, photorevised 1981; "Paterson, NJ," 1955, photorevised 1981; and "Hackensack, NJ," 1955, photorevised 1981.

8. Fifteen-Mile Surface Water Pathway Map for Murray Hill Parkway Site, based on U.S. Department of the Interior, National Wetlands Inventory, 7.5 minute series, Quadrangles for "Weehawken, NJ-PA," 1976; "Orange, NJ," "Elizabeth, NJ," 1976; and "Jersey City, NJ-NY," 1976.

9. U.S. EPA, Final Draft Preliminary Assessment Report of United States Printing Ink, prepared by NUS Corporation, February 9, 1990.

10. Site Inspection of Murray Hill Parkway Site, conducted by New Jersey Department of Environmental Protection, Hazardous Site Mitigation Administration, September 18, 1986.

11. Field Notebook No. HNUS 031, Murray Hill Parkway Site, J078-SP, Sampling event conducted by HALLIBURTON NUS Environmental Corporation, Iselin, NJ, July 15, 1992.

REFERENCES (CONT'D)

12. U.S. EPA Contract Laboratory Program, ITAS-Knoxville (organic analyses), and Datachem Laboratories, Inc. (inorganic analyses), Laboratory analyses from sampling event conducted by HALLIBURTON NUS Environmental Corporation on July 15, 1992.

13. National Flood Insurance Program, Flood Insurance Rate Map (FIRM), Hackensack Meadowlands District, New Jersey, Bergen and Hudson Counties, Panel 3 of 10, Community Panel No. 340570 0003 A, Effective Date: December 15, 1982.

14. Telecon Note: Conversation between Bill Anders, NJDEP, Division of Game, Shell Fisheries and David Florin, HALLIBURTON NUS Environmental Corporation, July 23, 1991.

15. Telecon Note: Conversation between Bill Nierstedt and Ed Consavic, both of Hackensack Meadowlands Development Commission, and Richard Settino, HALLIBURTON NUS Environmental Corporation, January 4, 1991.

REFERENCE NO. 1

CERCLIS DATA BASE TIME: 17:26:05 U.S. EPA SUPERFUND PROGRAM VERSION 2.00
LEVEL: REGION 02 ** C E R C L I S ** RUN DATE: 08/03/92
SELECTION: INTEGRATED LIST-4: SITE ALIAS LOCATION LISTING RUN TIME: 09:32:00

SEQUENCE: REG, ST, SITE NAME
REGION: 02

EPA ID	SITE/ALIAS NAME / STREET / CITY / COUNTY NAME	STATE / COUNTY	ZIP CODE	ALIAS SEQ. #	NAME SOURCE	FED FAC	CONG DIST.
NJD980770606	MT. OLIVE SITE				EPA	N	NJ-13
	WOLFE RD.						
	MOUNT OLIVE TWP	NJ	07828				
	MORRIS	027					
	MT. OLIVE SCHOOL BUS GARAGE			01			
NJD002001550	MUELLER BELTING & SPECIALTY CO INC				EPA	N	NJ-07
	150 NORTH MIDLAND AVE						
	SADDLE BROOK	NJ	07662				
	BERGEN	003					
NJD982532988	MULLER MACHINERY					N	NJ-06
	135 WHITMAN AVE						
	EDISON	NJ	08817				
	MIDDLESEX	023					
	KOPPERS CO (NJD980529341)			01			
	584 RTE 130						
		NJ	08619				
NJD982273450	MUNICIPAL SWIMMING POOL					N	NJ-10
	RAYMOND BLVD. WAYDELL ST.+ FER						
	NEWARK	NJ	07105				
	ESSEX	013					
	HAYES PARK POOL			01			
NJD981083108	MUNICIPAL WELL CONTAMINATION				STATE	N	NJ-12
	CORKERY LANE & BUTTONWOOD DR						
	MONROE	NJ	07434				
	GLOUCESTER	015					
* NJD980769327	MURRAY HILL PARKWAY SITE				EPA	N	NJ-09
	343 MURRAY HILL PARKWAY						
	EAST RUTHERFORD	NJ	07073				
	BERGEN	003					

CERCLIS DATA BASE TIME: 17:26:05 U.S. EPA SUPERFUND PROGRAM VERSION 2.00
LEVEL: REGION 02 ** C E R C L I S ** RUN DATE: 08/03/92
SELECTION: INTEGRATED LIST-4: SITE ALIAS LOCATION LISTING RUN TIME: 09:32:00

SEQUENCE: REG, ST, SITE NAME
REGION: 02

EPA ID	SITE/ALIAS NAME / STREET / CITY / COUNTY NAME	STATE / COUNTY	ZIP CODE	ALIAS SEQ. #	NAME SOURCE	FED FAC	CONG DIST.
* NJD980769327 (CONTINUED)	US PRINTING INK			01			
NJD980654198	MYERS PROP LOWER KINGTOWN RD FRANKLIN TWP HUNTERDON	NJ 019	08822		EPA	N	NJ-12
	ELKO CHEMICAL CO.(NJD980529069) LOWER KINGSTON RD HUNTERDON	NJ	08822	01			
	MYERS PROP HUNTERDON	NJ		02			
NJD002187490	MYKROY CERAMICS ORBEN DR LEDGEWOOD MORRIS	NJ 027	07852		EPA	N	NJ-13
	MYKROY CERAMICS MORRIS	NJ		01			
NJD980530745	MYKROY CERAMICS TAMARACK RD ANDOVER SUSSEX	NJ 037	07821		NOTIS	N	NJ-13
	MYKROY CERAMICS (NJD980773881)			01			
NJD001368109	NABISCO 2111 ROUTE 208 FAIR LAWN BERGEN	NJ 003	07410			N	NJ-05

CERCLIS DATA BASE TIME: 17:26:05 U.S. EPA SUPERFUND PROGRAM VERSION 2.00
LEVEL: REGION 02 ** C E R C L I S ** RUN DATE: 08/03/92
SELECTION: INTEGRATED LIST-4: SITE ALIAS LOCATION LISTING RUN TIME: 09:32:00

SEQUENCE: REG, ST, SITE NAME
REGION: 02

EPA ID	SITE/ALIAS NAME / STREET / CITY / COUNTY NAME	STATE / COUNTY	ZIP CODE	ALIAS SEQ. #	NAME SOURCE	FED FAC	CONG DIST.
NJD063173280	UNION CHEMICALS-DIV OF UNION OIL CO				EPA	N	NJ-06
	350 ROOSEVELT AVENUE						
	CARTERET	NJ	07008				
	MIDDLESEX	023					
NJD001389360	UNION INK COMPANY INC					N	NJ-14
	453 BROAD AVENUE						
	RIDGEFIELD	NJ	07657				
	BERGEN	003					
NJD986570893	UNION STREET ASBESTOS SITE					N	NJ-01
	END OF UNION STREET						
	MORRIS	NJ	08110				
	CAMDEN	007					
NJD980771448	UNION TWP D.P.W.				EPA	N	NJ-05
	JEFFERSON AV						
	UNION TWP	NJ	07083				
	UNION	039					
NJD980770416	UNIROYAL-PHELPS DODGE				EPA	N	NJ-15
	DOCKS CORNER RD						
	SOUTH BRUNSWICK TWP	NJ	08852				
	MIDDLESEX	023					
	PHELPS DODGE			01			
NJ6180000055	UNITED STATES POSTAL SERVICE					Y	NJ-10
	FEDERAL SQUARE ROOM B-97						
	NEWARK	NJ	07102				
	ESSEX	013					
	UNITED STATES POSTAL SERVICE			01			
	ESSEX	NJ					
* NJD095171948	UNITED STATES PRINTING INK					N	NJ-09
	343 MURRY HILL PARKWAY						
	EAST RUTHERFORD	NJ	07073				
	BERGEN	003					

CERCLIS DATA BASE TIME: 17:26:05 U.S. EPA SUPERFUND PROGRAM VERSION 2.00
LEVEL: REGION 02 ** C E R C L I S ** RUN DATE: 08/03/92
SELECTION: INTEGRATED LIST-4: SITE ALIAS LOCATION LISTING RUN TIME: 09:32:00

SEQUENCE: REG, ST, SITE NAME
REGION: 02

EPA ID	SITE/ALIAS NAME / STREET / CITY / COUNTY NAME	STATE / COUNTY	ZIP CODE	ALIAS SEQ. #	NAME SOURCE	FED FAC	CONG DIST.
* NJD095171948 (CONTINUED)	UNITED STATES PRINTING INK			01			
	BERGEN	NJ					
	MURRAY HILL PARKWAY (NJD980769574)			02			
	191 MURRAY STREET						
	NEWARK	NJ	07101				
				03			
NJD001724988	UNITED STATES STEEL (USS) CHEMICAL INC				EPA	N	NJ-15
	1711 W ELIZABETH AVE						
	LINDEN	NJ	07036				
	UNION	039					
	US STEEL CORP			01			
	711 W ELIZABETH AVE						
	LINDEN	NJ	07036				
	US STEEL-POLYESTER UNIT			02			
	UNITED STATES STEEL (USS) CHEMICAL INC			03			
	UNION	NJ					
NJD098159130	UNITED STEEL & WIRE CO., INC.					N	NJ-01
	SUCKLE & NATIONAL HIGHWAYS						
	PENNSAUKEN	NJ	08110				
	CAMDEN	007					
	UNITED STEEL & WIRE CO., INC.			01			
	CAMDEN	NJ					

SELECTION:
SEQUENCE: REGION, STATE, SITE NAME

EVENTS: ALL

EPA ID NO.	SITE NAME / STREET / CITY / COUNTY CODE AND NAME	STATE ZIP / CONG DIST.	OPRBLE UNIT	EVENT TYPE	EVENT QUAL	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
NJD980770606	MT. OLIVE SITE		00	DS1			04/10/84	STATE(FUND)
	WOLFE RD.			PA1	NO FURTHER REMDL ACT PLND	10/01/85	11/01/85	STATE(FUND)
	MOUNT OLIVE TWP	NJ 07828						
	027 MORRIS	NJ-13						
NJD002001550	MUELLER BELTING & SPECIALTY CO INC		00	DS1			06/01/81	EPA (FUND)
	150 NORTH MIDLAND AVE			PA1	NO FURTHER REMDL ACT PLND		09/01/84	EPA (FUND)
	SADDLE BROOK	NJ 07662						
	003 BERGEN	NJ-07						
NJD982532988	MUELLER MACHINERY		00	DS1			04/01/81	EPA (FUND)
	135 WHITMAN AVE			PA1	LOWER PRIORITY		09/01/81	EPA (FUND)
	EDISON	NJ 08817		SI1	NO FURTHER REMDL ACT PLND	04/30/90	03/12/91	EPA (FUND)
	023 MIDDLESEX	NJ-06						
NJD982273450	MUNICIPAL SWIMMING POOL		00	IR1		07/13/83	07/20/83	EPA (FUND)
	RAYMOND BLVD. WAYDELL ST.+ FER							
	NEWARK	NJ 07105						
	013 ESSEX	NJ-10						
NJD981083108	MUNICIPAL WELL CONTAMINATION		00	DS1			05/01/85	STATE(FUND)
	CORKERY LANE & BUTTONWOOD DR			PA1	NO FURTHER REMDL ACT PLND	05/01/85	06/01/85	STATE(FUND)
	MONROE	NJ 07434						
	015 GLOUCESTER	NJ-12						
* NJD980769327	MURRAY HILL PARKWAY SITE		00	DS1			04/10/84	STATE(FUND)
	343 MURRAY HILL PARKWAY			PA1	LOWER PRIORITY		05/31/85	STATE(FUND)
	EAST RUTHERFORD	NJ 07073		SI1	HIGHER PRIORITY	09/19/86	09/29/86	EPA (FUND)
	003 BERGEN	NJ-09						
NJD980654198	MYERS PROP		00	RS1		03/19/90	09/01/90	EPA (FUND)
	LOWER KINGTOWN RD			RS2		10/17/91	10/28/91	EPA (FUND)
	FRANKLIN TWP	NJ 08822		IR1		05/14/84	08/22/84	EPA (FUND)
	019 HUNTERDON	NJ-12		RV2	STABILIZATION	10/28/87	03/12/88	EPA (FUND)

SELECTION:
SEQUENCE: REGION, STATE, SITE NAME

EVENTS: ALL

EPA ID NO.	SITE NAME / STREET / CITY / COUNTY CODE AND NAME	STATE ZIP / CONG DIST.	OPRBLE UNIT	EVENT TYPE	EVENT QUAL	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
NJD063173280	UNION CHEMICALS-DIV OF UNION OIL CO		00	DS1			07/29/87	STATE(FUND)
	350 ROOSEVELT AVENUE			PA1	LOWER PRIORITY	07/29/87	08/14/87	STATE(FUND)
	CARTERET	NJ 07008		SI1	NO FURTHER REMDL ACT PLND	03/31/89	06/30/89	EPA (FUND)
	023 MIDDLESEX	NJ-06						
NJD001389360	UNION INK COMPANY INC		00	DS1			01/29/92	EPA (FUND)
	453 BROAD AVENUE							
	RIDGEFIELD	NJ 07657						
	003 BERGEN	NJ-14						
NJD986570893	UNION STREET ASBESTOS SITE		00	DS1			02/01/89	EPA (FUND)
	END OF UNION STREET			PA1	LOWER PRIORITY	02/28/89	03/31/89	EPA (FUND)
	MORRIS	NJ 08110						
	007 CAMDEN	NJ-01						
NJD980771448	UNION TWP D.P.W.		00	DS1			04/10/84	STATE(FUND)
	JEFFERSON AV			PA1	NO FURTHER REMDL ACT PLND	07/29/87	08/21/87	STATE(FUND)
	UNION TWP	NJ 07083						
	039 UNION	NJ-05						
NJD980770416	UNIROYAL-PHELPS DODGE		00	DS1			04/10/84	STATE(FUND)
	DOCKS CORNER RD			PA1	HIGHER PRIORITY	04/01/85	04/30/85	STATE(FUND)
	SOUTH BRUNSWICK TWP	NJ 08852		SI1	HIGHER PRIORITY	01/01/91	03/28/91	STATE(FUND)
	023 MIDDLESEX	NJ-15						
NJ6180000055	UNITED STATES POSTAL SERVICE		00	DS1			03/13/89	EPA (FUND)
	FEDERAL SQUARE ROOM B-97			PA1	NO FURTHER REMDL ACT PLND	03/24/89	06/26/89	FED. FAC.
	NEWARK	NJ 07102						
	013 ESSEX	NJ-10						
* NJD095171948	UNITED STATES PRINTING INK		00	DS1			10/01/89	EPA (FUND)
	343 MURRY HILL PARKWAY			PA1	DEFERRED TO RCRA OR NRC		03/30/90	EPA (FUND)
	EAST RUTHERFORD	NJ 07073						
	003 BERGEN	NJ-09						

REFERENCE NO. 2

Ref. 12 J078-016-R

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
J061	02/14/92	11:30

DISTRIBUTION:
- Tooky's Garage
- Staff

BETWEEN:	OF:	PHONE:
Dan Van Abs	NJDEPE, Bureau of Water Supply Planning	(609) 633-1179

AND: K. Campbell (NUS)

DISCUSSION:

Mr. Van Abs returned my call of 02/13/92, and provided the following information on Wellhead Protection Area (WHPA) delineation for the State of New Jersey:

- WHPAs are not yet delineated for the state. The Bureau of Water Supply Planning is working on a draft delineation (a multi-year process).

Mr. Van Abs will put HNEC on their mailing list to receive updates on WHPA regulations.

ACTION ITEMS:

K. Campbell 02/14/92

REFERENCE NO. 3

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Murray Hill Parkway Site File (3078gp) **DATE:** September 18, 1992

FROM: D. Foerter **COPIES:**

SUBJECT: Groundwater use within 4 miles of Murray Hill Parkway Site.

REFERENCE:

The attached Telecon notes document groundwater use of all towns within 4 miles of the Murray Hill Parkway Site. All towns with the exception of Nutley and Wallington derive there drinking water from sources outside the ~~4~~ 4 mile radius of the site. The Town of Nutley has a well that is available to Nutley residents for ~~drinking~~ bottling. The population of Nutley is approximately 27,000 people. There is also 1 ~~well~~ residential well located in Wallington, and serves an approximate population of 3. The following presents where all towns within 4 miles of the site serve their drinking water from:

HACKENSACK WATER COMPANY (ORADELL RESERVOIR)

- Wood-Ridge
- West New York
- North Bergen
- Moonachie
- East Rutherford
- Rutherford
- Hasbrouck Heights
- Carlstadt
- Little Ferry
- Secaucus

PASSAIC VALLEY WATER COMMISSION (WANAQUE RESERVOIR)

- LODI
- PASSAIC
- WALLINGTON
- North Arlington
- Garfield (also from wells in Elmwood Park)
- Nutley

★ Belleville and Kearny get their water from the Wanaque Reservoir, and Lyndhurst gets its water from the Jersey City Water Dept, which gets its water from the Boonton Reservoir.

Dennis Foerter 9/18/92

NUS 443A 58 1182

NUS CORPORATION AND SUBSIDIARIES	TELECON NOTE

CONTROL NO:	DATE:	TIME:
J078	9/1/92	1340

DISTRIBUTION:

Murray Hill Pkwy Site File J078

BETWEEN:	OF:	PHONE:
Susan	Passaic Valley Water Commission	(201) 340-4300

AND:

D. Foerter

DISCUSSION:

Susan informed me that the Passaic Valley Water Commission gets its water from the Wanaque Reservoir and an intake located in the Passaic River in Little Falls.

[signature]
9/1/92

ACTION ITEMS:

NUS 067 REVISED 0685

001C-
J043RF

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
J043RP	3/12/92	11:17

DISTRIBUTION:

– Sinclair and Valentine Co. Inc. file (COR)

BETWEEN:	OF:	PHONE:
Engineering Dept. employee	Hackensack Water Co.	(201) 767-9300

AND: Thomas Varner (NUS)

DISCUSSION:

I called to obtain information concerning drinking water supplies for the following towns:

- West New York
- North Bergen
- Moonachie
- East Rutherford
- Rutherford

I was told by this employee (he wouldn't give me his name) that the Hackensack Water Co. supplies all of the above with water primarily from the Oradell Reservoir. They also use wells, the closest of which are in Bogota and Paramus.

TAV 3/12/92

ACTION ITEMS:

00136
J016

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
J016	3/16/92	0930

DISTRIBUTION:

Alpha Metals Inc. File J016

BETWEEN:	OF:	PHONE:
Jean	Town of Nutley	(201) 284-4957

AND:

D. Foerter (NUS)

DISCUSSION:

Re: Drinking Water (Nutley)

Jean informed me that there is a well in Nutley that is available to Nutley ~~Residences~~ Residents for bottling. The population of Nutley is 27,000. This well is located outside of Town Hall at or near the intersection of Chestnut St. and Vincent Place. This well is not tied into any public supply line. The Town of Nutley also purchases its drinking water supply from the Passaic Valley Water Commission and the City of Newark, both of which derive drinking water from sources outside the 4-mile radius of Alpha Metals Inc.

Dennis Foerter
3/16/92

ACTION ITEMS:

NUS CORPORATION **TELECON NOTE**

CONTROL NO:	DATE: 2/7/90	TIME: 1500

DISTRIBUTION:

U.S. PRINTING INK File
TDD# 02-8910-32

BETWEEN: Bob Siery	OF: Wallington Public Works	PHONE: (201) 777-1726

AND: Peter Babich (NUS)

DISCUSSION:

I asked Mr. Siery about water usage in Wallington. He informed me that only 1 private residence uses groundwater for drinking. The residence is located on Kossuth Street.

Other uses include 3 commercial businesses and 1 farm (approx 7 acres) for irrigation.

Drinking water for Wallington is supplied by Passaic Valley Water Dept. For emergencies Wallington uses Hackensack Water Dept. as backup.

ACTION ITEMS:

Rol. 11 J078-018-R

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO:	DATE: 4/20/92	TIME: 1:30pm

DISTRIBUTION:

File

BETWEEN: U.S. Census Bureau	OF:	PHONE: (301) 763-5002

AND: Priscilla Fritsch

DISCUSSION:

Based on the 1990 census, the average number of persons per household for the following counties is:

Bergen	2.64
Burlington	2.79
Middlesex	2.71
Monmouth	2.74
Morris	2.78
Summerset	2.67

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES		**TELECON NOTE**
CONTROL NO: J078	DATE: 9/2/92	TIME: 1505

DISTRIBUTION:

Murray Hill Parkway Site File J078

BETWEEN:	OF:	PHONE:
Joe Russo	Lodi - Department of Public Works	(201) 365-4068

AND:

D. Foerter (HNUS

DISCUSSION:

Mr. Russo informed me that Lodi gets its drinking water from the Passaic Valley Water Commission

Dennis Foerter
9/2/92

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
02-9001-11 /NJDH$J	January 18, 1990	1025

DISTRIBUTION:
Edson Tool & Manufacturing

BETWEEN:	OF:	PHONE:
Bob	North Arlington Public Works	(201) 955-5665

AND:
Sue Lenczyk

DISCUSSION:
North Arlington receives its drinking water from the Passaic Valley Water Commission, which uses reservoir water. Bob did not know which reservoir, but suggested I call the Commission. He also told me that there are no wells in North Arlington used for drinking.

ACTION ITEMS:

Sue Lenczyk 1/18/90

NUS 067 REVISED 0686

NUS CORPORATION AND SUBSIDIARIES | **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
J078	9/2/92	0945

DISTRIBUTION:

Murray Hill Parkway Site

BETWEEN:	OF:	PHONE:
Mike	Garfield - Department of Public Works	(201) 478-9081

AND: D. Foerter

DISCUSSION:

Mike informed me that the City of Garfield gets its drinking water from the following sources:

- 2/3 from public supply wells in Elmwood Park
- 1/3 from the Passaic Valley Water Commission

* wells in Elmwood Park are outside of the Murray Hill Parkway Sites' 4-mile Radius?

Denny Foerter
9/2/92

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
J078	9/2/92	1415

DISTRIBUTION:

Murray Hill Parkway Site File J078

BETWEEN:	OF:	PHONE:
Miriam (clerk)	Passaic Dept of Public works	(201) 365-5654

AND:

D. Foerter

DISCUSSION:

Miriam informed me that the City of Passaic gets its water from the Passaic Valley Water Commission, which derives its water from sources outside the 4 mile radius of the Murray Hill Parkway Site and upstream of the site's 15 mile surface water migration pathway

Denny [signature]
9/2/92

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES	TELECON NOTE

CONTROL NO:	DATE:	TIME:
J078	9/3/92	1057

DISTRIBUTION:

Murray Hill Parkway Site File J078

BETWEEN:	OF:	PHONE:
Micki Miller	Wood-Ridge Department of Public Works	(201) 939-0202

AND: D. Foerter (HNUS)

DISCUSSION:

Ms. Miller informed me that Wood-Ridge gets its drinking water from the Hackensack Water Company

Dennis Foerter
9/3/92

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
J078	9/2/92	1503

DISTRIBUTION:

Murray Hill Parkway Site File J078

BETWEEN:	OF:	PHONE:
John Blabeck	Little Ferry Department of Public works	(201) 641-0023

AND:

D. Foerter, (HNUS)

DISCUSSION:

Mr. Blabeck informed me that the town of Little Ferry gets its drinking water from the Hackensack Water Company

Dennis J Foerter
9/2/92

ACTION ITEMS:

NUS 067 REVISED 0686

NUS CORPORATION AND SUBSIDIARIES		TELECON NOTE
CONTROL NO: J078	DATE: 9/2/92	TIME: 1427

DISTRIBUTION:

Murray Hill Parkway Site File J078

BETWEEN:	OF:	PHONE:
Jim Cotter	Hasbrouck Heights Department of Public works	(201) 288-1072

AND:

D. Foerter (HNUS)

DISCUSSION:

Mr. Cotter informed me that Hasbrouck Heights gets its drinking water from the Hackensack Water Company

Dennis J Foerter
9/2/92

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
J078-SP	9/2/92	1425

DISTRIBUTION:

Murray Hill Parkway Site File J078

BETWEEN:	OF:	PHONE:
Robert Healey	Carlstadt DEPT. of Public Works	(201) 939-2857

AND:

D. Foerter (HNUS)

DISCUSSION:

Mr. Healey informed me that the Town of Carlstadt gets its drinking water from the Hackensack Water Company

Dave Foerter
9/2/92

ACTION ITEMS:

NUS 067 REVISED 0685

NUS CORPORATION AND SUBSIDIARIES — TELECON NOTE

CONTROL NO.:	DATE:	TIME:
J014	11/19/91	1407

DISTRIBUTION:

— Diamond Head Oil Refining Div. File

BETWEEN:	OF:	PHONE:
Dept. of Public Works	SECAUCUS	(201) 330-2080

AND: RICHARD SETTINO (NUS)

DISCUSSION:

Asked where Secaucus got public supply water from -- All water in Secaucus comes from the Hackensack Water Company. No private drinking wells are known to exist.

RS 11/19/91

ACTION ITEMS:

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
02-9002-04	February 16, 1990	9:15 am

DISTRIBUTION: Harrison Gas Plant
$475 NJDXSI

BETWEEN:	OF:	PHONE:
Bruce Sanders	Kearney H_2O Dept. 402 Kearney Ave.	(201) 991-2671

AND: Carol Donnelly

DISCUSSION:
I called the Kearney Water Department to check on an old Telecon. Carol stated that Kearney does not operate any ground water wells or intakes wells in the Passaic River. Kearney does own 12% of the Wanaque Reservoir and draws its Municipal water from that location in Passaic County. She stated that there are some wells around Harrison Avenue but these are used for industrial purposes.

ACTION ITEMS:

02-9001-

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
02-9001-11 / NJDH$I	January 18, 1990	1000

DISTRIBUTION:

Edison Tool & Manufacturing

BETWEEN:	OF:	PHONE:
(1) Belleville Public Works (Frank) (2) Belleville Water Meter Dept. (3) " Health Dept.		(201) 450-3419 450-3339 450-3390

AND:

Sue Lenczyk

DISCUSSION:

Based on conversations with three different departments, it was determined that the water supply for Belleville comes from the Wanaque Reservoir. There are no public supply wells for Belleville, but there are wells used for industrial purposes. Some wells were put in during the drought, but they were not used for drinking. Rather, they were used for watering lawns.

ACTION ITEMS:

Sue Lenczyk 1/18/90

NUS 087 REVISED 0686

3R ~~[illegible]~~

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO:	DATE:	TIME:
02-9001-11/NJDHSI	January 18, 1990	10,4

02-9001-11

DISTRIBUTION:
Edson Tool & Manufacturing

BETWEEN:	OF:	PHONE:
Lyndhurst Public Works Dept.		(201) 438-5478

AND:
Sue Lenczyk

DISCUSSION:
The water supply for Lyndhurst comes from the Jersey City Water Company, which draws water from the Boonton Reservoir. All drinking water for Lyndhurst comes from the reservoir — none comes from wells.

ACTION ITEMS:

Sue Lenczyk 1/18/90

NUS 087 REVISED 0685

REFERENCE NO. 4

federal register

Friday
December 14, 1990

Part II

Environmental Protection Agency

40 CFR Part 300
Hazard Ranking System; Final Rule

TABLE 3-6.—HYDRAULIC CONDUCTIVITY OF GEOLOGIC MATERIALS

Type of material	Assigned hydraulic conductivity [a] (cm/sec)
Clay; low permeability till (compact unfractured till); shale; unfractured metamorphic and igneous rocks	10^{-8} ← 8
Silt; loesses; silty clays; sediments that are predominantly silts; moderately permeable till (fine-grained, unconsolidated till, or compact till with some fractures); low permeability limestones and dolomites (no karst); low permeability sandstone; low permeability fractured igneous and metamorphic rocks	10^{-6} ← 6
Sands; sandy silts; sediments that are predominantly sand; highly permeable till (coarse-grained, unconsolidated or compact and highly fractured); peat; moderately permeable limestones and dolomites (no karst); moderately permeable sandstone; moderately permeable fractured igneous and metamorphic rocks	10^{-4} ← 4
Gravel; clean sand; highly permeable fractured igneous and metamorphic rocks; permeable basalt; karst limestones and dolomites	10^{-2} ← 2

[a] Do not round to nearest integer.

TABLE 3-7.—TRAVEL TIME FACTOR VALUES [a]

Hydraulic conductivity (cm/sec)	Thickness of lowest hydraulic conductivity layer(s) [b] (feet)

REFERENCE NO. 5

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Murry Hill Parkway Site File

DATE: 10/6/92

FROM: R. Serrano RS

COPIES: —

SUBJECT: Sensitive Environments within 15 miles downstream of site

REFERENCE: —

Letters received from the State of New Jersey Department of Environmental Protection and Energy, Division of Parks and Forestry and the U.S. Department of the Interior, Fish and Wildlife Service indicate the following sensitive environments exist within 15 miles downstream of site. The letters are being kept in the file due to confidentiality.

SPECIES	STATUS
Least Tern (Sterna antillarum)	State Endangered
Salt Marsh Bulrush (Scirpus maritimus)	State Endangered
Shortnose Sturgeon (Acipenser brevirostrum)	Federal Endangered

NUS 443A 58 1182

REFERENCE NO. 6

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: Murray Hill Parkway Site
DATE: 10/2/92
FROM: Dennis Foerster
COPIES:
SUBJECT: General Information (Murray Hill Parkway Site)
REFERENCE:

The attached telecon document updated or additional information on the Murray Hill Parkway Site, aka US Printing Ink:

- Approximately 90 people work on site

- Approximately 262,640 people live within 4 miles of the site.
  - 0-1/4 mile: 0
  - 1/4-1/2 mile: 410
  - 1/2-1 mile: 7,660
  - 1-2 miles: 43270
  - 2-3 miles: 69,570
  - 3-4 miles: 141,780

Dennis Foerster
10/2/92

NUS 443A 58 1182

NUS CORPORATION AND SUBSIDIARIES	**TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
J078-SP	10/2/92	0957

DISTRIBUTION:

Murray Hill Parkway Site File J078

BETWEEN:	OF:	PHONE:
Patrick Ugaro	U.S. Printing Ink	(201) 937-7100

AND:

D. Foerster (HNUS) (NUS)

DISCUSSION:

Mr. Ugaro informed me that approximately 90 people work at U.S. Printing Ink at the East Rutherford location.

Dennis Foerster

ACTION ITEMS:

NUS 067 REVISED 0585

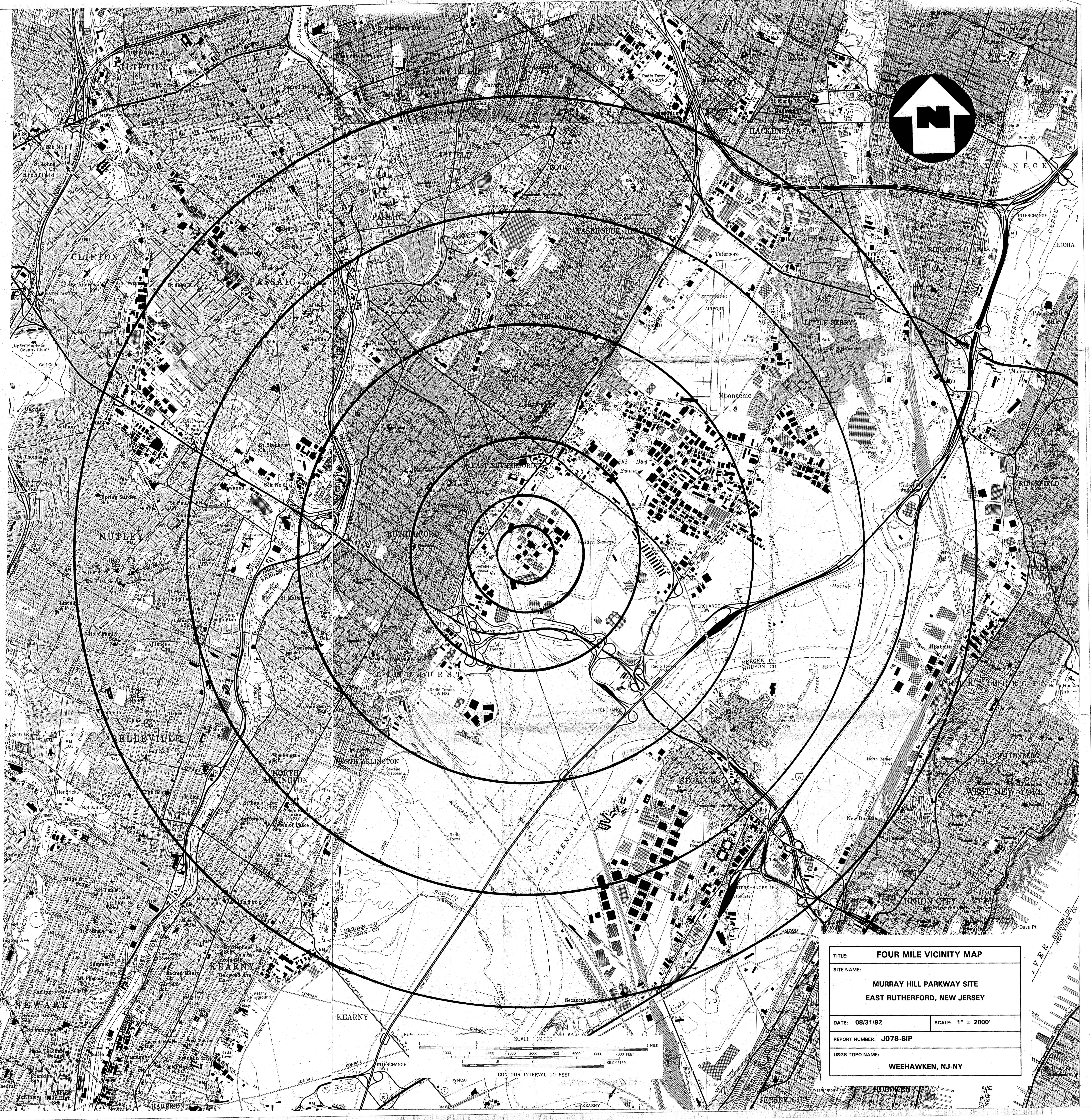
J077-008-N

MURRAY HILL PARKWAY SITE

LATITUDE 40:49:14 LONGITUDE 74:05:34 1980 POPULATION

KM	0.00- 0.4	0.4- 0.8	0.8- 1.6	1.6- 3.2	3.2- 4.8	4.8- 6.4	SECTOR TOTALS
S 1	0	409	7660	43272	69567	141782	262690
RING TOTALS	0	409	7660	43272	69567	141782	262690

REFERENCE NO. 7



TITLE: FOUR MILE VICINITY MAP

SITE NAME: MURRAY HILL PARKWAY SITE
EAST RUTHERFORD, NEW JERSEY

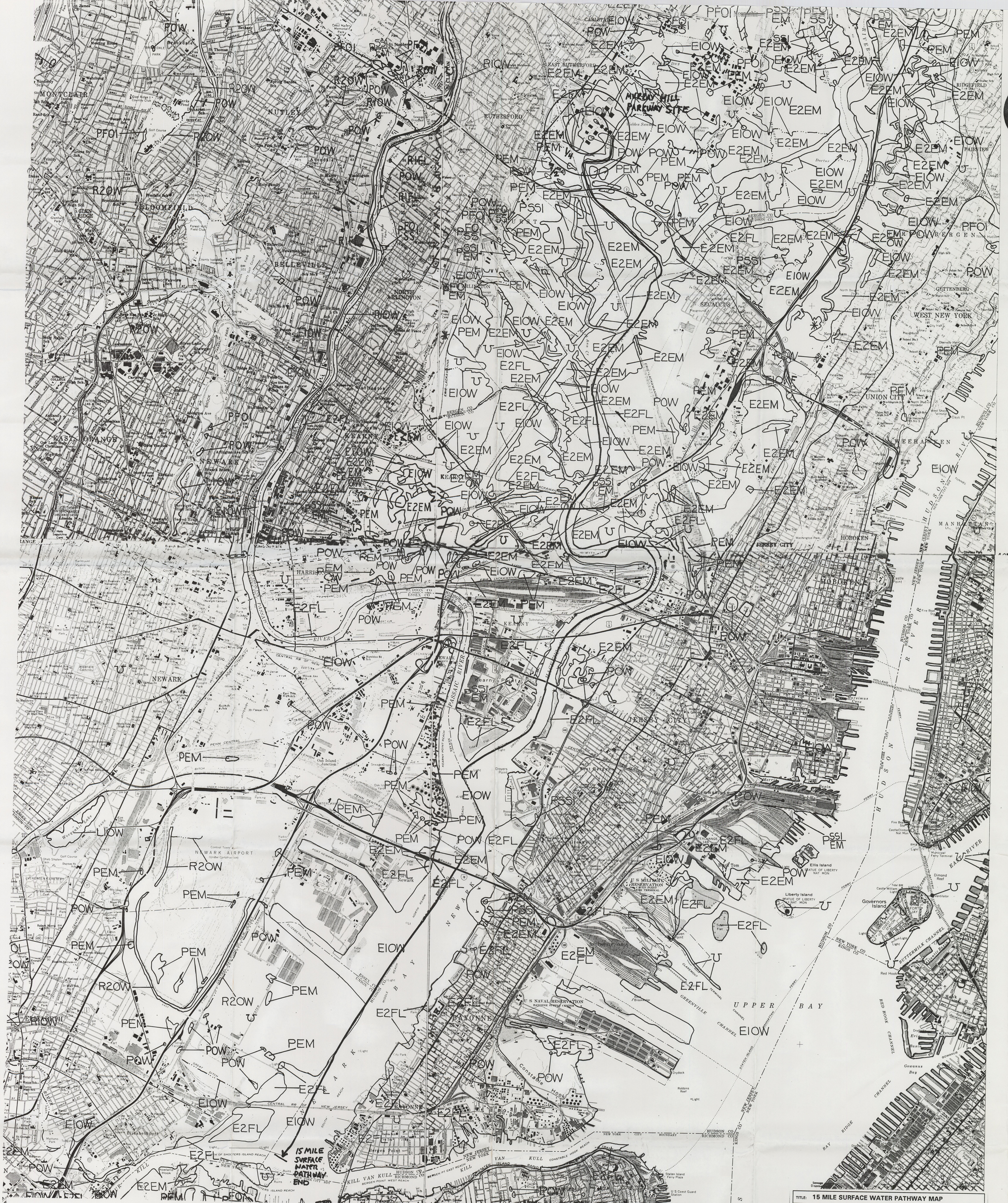
DATE: 08/31/92

SCALE: 1" = 2000'

REPORT NUMBER: J078-SIP

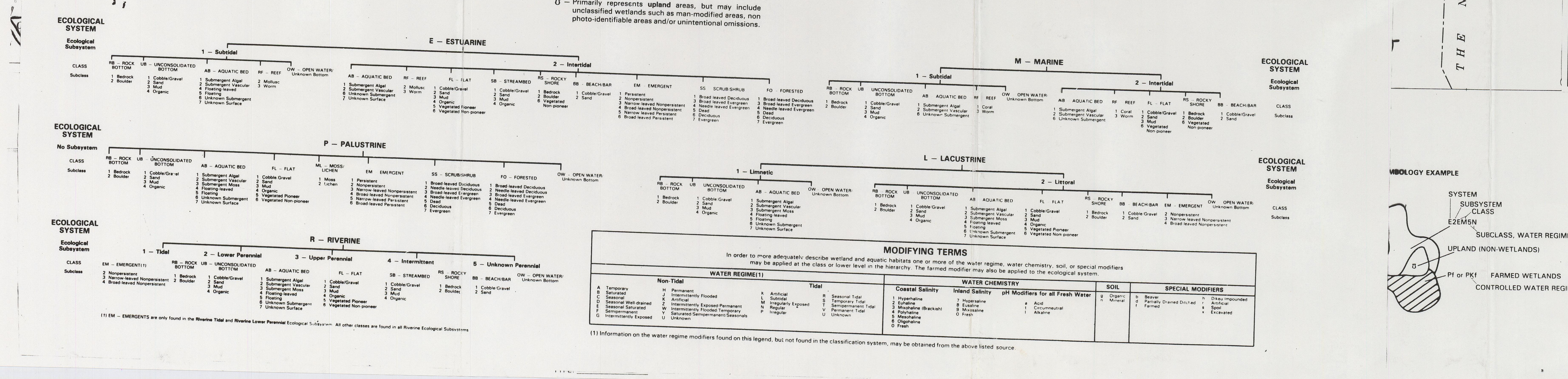
USGS TOPO NAME: WEEHAWKEN, NJ-NY

REFERENCE NO. 8



WETLAND LEGEND

U – Primarily represents **upland** areas, but may include unclassified wetlands such as man-modified areas, non photo-identifiable areas and/or unintentional omissions.



TITLE:	**15 MILE SURFACE WATER PATHWAY MAP**
SITE NAME:	**MURRAY HILL PARKWAY SITE, EAST RUTHERFORD, N.J.**
DATE: 05-29-92	SCALE: 1" = 2000'
REPORT NUMBER:	JO78SIP
USGS TOPO NAME:	**WEEHAWKEN, N.J.**

0°37'30"
74°00'

JERSEY CITY, N.J.

NOTES TO THE USER

- Wetlands which have been field examined are indicated on the map by an asterisk (*).
- Dominance type (either vegetative or sedentary animal) can be added to the map by the interested user.
- Additions or corrections to the wetlands information displayed on this map are solicited. Please forward such information to the address indicated.

AERIAL PHOTOGRAPHY

DATE: 10 / 29 / 76
SCALE: 1:80000
TYPE: B-W

DATE: / /
SCALE:
TYPE:

DATE: / /
SCALE:

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Prepared by Office of Biological Services for the National Wetlands Inventory

REFERENCE NO. 9

02-8910-32-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT
UNITED STATES PRINTING INK
EAST RUTHERFORD, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8910-32
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

FEBRUARY 9, 1990

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

ANTHONY F. CULMONE JR.
PROJECT MANAGER

PETER BABICH
SITE MANAGER

REVIEWED/APPROVED BY:

for RN
RONALD M. NAMAN
FIT OFFICE MANAGER

[redacted]

001

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. **Site Name/Alias** United States Printing Ink (USPI)

   Street 343 Murray Hill Parkway

   City East Rutherford **State** NJ **Zip** 07073

2. **County** Bergen **County Code** 003 **Cong. Dist.** 9

3 **EPA ID No.** NJD095171948

4. **Latitude** 40° 49' 13" N **Longitude** 74° 05' 33" W

   USGS Quad. Weehawken, NJ - NY

5. **Owner** Millmaster Onyx Group Kewanee Ind. Inc. **Tel. No.** (212) 687-2757

   Street 99 Park Avenue

   City New York **State** NY **Zip** 10016

6. **Operator** United States Printing Ink **Tel. No.** (201) 933-7100

   Street 343 Murray Hill Parkway

   City East Rutherford **State** NJ **Zip** 07073

7. **Type of Ownership**

   ☒ Private ☐ Federal ☐ State
   ☐ County ☐ Municipal ☐ Unknown ☐ Other ______

8. **Owner/Operator Notification on File**

   ☒ RCRA 3001 Date 8-15-80 ☐ CERCLA 103c Date ______
   ☐ None ☐ Unknown

9. **Permit Information**

Permit	Permit No.	Date Issued	Expiration Date	Comments
NJDEP/DWR	NJ0003646	Unknown	Unknown	
NJDEP Air Permit	043644	8-3-79	8-3-84	
NJDEP Air Permit	043645	8-3-79	8-3-84	
NJDEP Air Permit	043646	8-3-79	8-3-84	

10. Site Status

☒ Active ☐ Inactive ☐ Unknown

11. Years of Operation 1961 to Present

12. Identify the types of waste units (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Management Areas

Waste Unit No.	Waste Unit Type	Facility Name for Unit
1	Drums	Drum Storage Area
2	Aboveground Tanks	Waste Ink Tanks

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

A Hazardous Waste Investigation performed by the New Jersey Department of Environmental Protection (NJDEP) on October 31, 1980 revealed approximately 200 drums of ink stacked 3 high and located on a permeable surface. Directly behind the drum storage area was a dry streambed. The vegetation inside the streambed was stained black. A small area containing construction/demolition debris was observed by NJDEP during the previously noted inspection.

As a result of this inspection a Notice of Prosecution was recommended. It is not known if the notice was issued.

Additionally, during a NJDEP inspection in 1981 numerous spills of various colors were noted on the soils. These spills were being spread by rain water.

13. Information available from

Contact Amy Brochu Agency U.S. EPA Tel. No. (201) 906-6802

Preparer Peter Babich Agency NUS Corp. Region 2 FIT Date February 9, 1990

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 1 - Drums, Drum Storage Area

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   United States Printing Ink (USPI) filed a Notification of Hazardous Waste Activity on August 15, 1980 and declared it was a generator, and a treatment, storage, or disposal facility (TSDF) of hazardous waste. On November 19, 1980, a Part A Hazardous Permit Application was submitted to the United States Environmental Protection Agency (U.S. EPA). The age of the waste unit is not known; however, USPI has been in operation since 1961.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   The drum storage area is located on the west side of the production building.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   The waste unit has a design capacity of 1,650 gallons. However, during a recent NUS Corp. Region 2 FIT off-site reconnaissance, approximately 250-300 drums were observed. It is not known if drums contained hazardous waste or raw material for ink production.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical states of the waste are liquid and powders or fines.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   It is suspected that colored ink pigments contain metals such as lead, chromium, and barium. Also reported to be present are solvent wastes, caustic wastes, wash water wastes, and sludges from cleaning tubs used in the formulation of ink from pigments.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   The wastes generated by USPI are collected in 55-gallon drums and stored in the drum storage area on an asphalt surface. It is not known if the storage area has any type of containment system. During a 1981 inspection, NJDEP reported that drums were uncovered and spills were evident with the potential for migration due to storm runoff. The vegetation in a dry streambed directly behind the site was stained black.

Ref. Nos. 1, 2, 3, 4, 17

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 2 - Aboveground Tanks , Waste Ink Tanks

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

   United States Printing Ink (USPI) field a Notification of Hazardous Waste Activity on August 15, 1980 and declared it was a generator, and a treatment, storage, or disposal facility (TSDF) of hazardous waste. On November 19, 1980, a Part A Hazardous Permit Application was submitted to the United States Environmental Protection Agency (U.S. EPA). The age of the waste unit is not known; however, USPI has been in operation since 1961.

2. **Describe the location of the waste unit and identify clearly on the site map.**

   The tank storage area is located on the west side of the production building.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

   The waste unit consits of two 1,000-gallon tanks for the collection of waste inks. An inspection report dated 1981 indicated that there was 500 gallons of waste in one tank.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical state of the waste is liquid.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   It is suspected that colored ink pigments contain metals such as lead, chromium, and barium. Also reported to be present are solvent wastes, caustic wastes, wash water wastes, and sludges from cleaning tubs used in the formulation of ink from pigments.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   The wastes generated by USPI are collected in two 1,000-gallon tanks. It is not known if these tanks were on an impermeable surface, or if they have any containment or diversion features.

Ref. Nos. 1, 2, 3, 4, 17

PART III: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

On October 31, 1980 the New Jersey Department of Environmental Protection (NJDEP) performed a hazardous waste investigation. During this inspection it was noted that directly behind the drum storage area was a dry stream bed. The vegetation in the stream was stained black. Black sludge accumulation was noted on and next to the stream bank. The lowest point of this stream contained a black liquid. A drainage pipe from this stream emptied into a larger stream that is a tributary to Berrys Creek. It is suspected that some colored ink pigments may contain metals such as lead, barium, and chromium. On September 16, 1981 NJDEP again inspected USPI. It was reported that general housekeeping in the rear of the facility was poor and that spills of various colors were noted throughout the site on the soil. The spills were being spread by rain water.

Ref. Nos. 3, 4

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

Triassic sediments, composed of sands, fine sands, silts, clay, and gravel, are almost entirely underlain by sedimentary Passaic Formation (formerly known as the Brunswick Formation) shale. Although the primary permeability of sedimentary shale is low, appreciable amounts of water are found in joints and fractures. Unless a significant number of these joints and fractures are penetrated by a well, yields may be relatively small. The region is heavily dependent upon unconsolidated glacial deposits for water supply, and where these occur in buried, eroded rock channels and are thick and permeable, the glacial sediments represent the most important source of groundwater. In locations where the surficial deposits are thick and permeable, direct hydraulic connection with the underlying bedrock, adjacent streams, rivers, and lakes exists. The glacial till consists of silt, loess silty clays, silty loams and moderately permeable till. The permeability value is estimated to be between 10^{-5} to 10^{-7} cm/sec. The aquifer of concern is the Passaic Formation. The estimated permeability of the stratified drift and bedrock aquifers is between 10^{-3} to 10^{-5} cm/sec. Reported static water level from a local well is 14 feet. The direction of the water movement in response to pumping parallels the strike of the beds, which is southwest to northeast.

Ref. Nos. 5, 7, 20

3. **Is a designated sole source aquifer within 3 miles of the site?**

A sole source aquifer has not been designated within 3 miles of the site.

Ref. No. 6

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

The depth of the lowest point of waste deposited is reported to be ground level. The reported static water level from a nearby well is 14 feet. This indicates a depth to groundwater of approximately 14 feet.

Ref. Nos. 7, 10

5. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the aquifer of concern?**

The permeability value for overburden sediments consisting of silt, loess, silty clays, silty loams and moderately permeable till is estimated to be between 10^{-5} to 10^{-7} cm/sec.

Ref. No. 5

6. **What is the net precipitation for the area?**

The estimated net annual precipitation for the area is 12 inches.

Ref. No. 5

7. **Identify uses of groundwater within 3 miles of the site (i.e., private drinking source, municipal source, commercial, industrial, irrigation, unusable).**

There is one known private well that supplies drinking water drawn from the aquifer of concern within 3 miles of the site. This well supplies drinking water for approximately 4 people. There are also 3 commercial wells and one well used for irrigation within 3 miles of the site.

Ref. Nos. 8, 9, 18

8. **What is the distance to and depth of the nearest well that is currently used for drinking or irrigation purposes?**

Distance Approximately 2.6 miles Depth 110 feet

Ref. No. 9

9. **Identify the population served by the aquifer of concern within a 3-mile radius of the site.**

There is one known residence in Wallington using the aquifer of concern. The well is located on Kossuth Street, approximately 2.6 miles northwest of the site and serves about 4 people.

Ref. No. 21

SURFACE WATER ROUTE

10. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminants to the facility.**

On October 10, 1980 an inspection conducted by NJDEP reported black sludge which appeared attributable to the site was noted on and next to the stream bank. It is suspected that some inks contain metals such as lead, barium, and chromium. Additionally during a 1981 inspection by NJDEP, it was reported that housekeeping was poor and that spills and open drums were observed.

Ref. Nos. 3, 4

11. Identify and locate the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.

The nearest downslope surface water is an unnamed tributary to Berrys Creek. Drainage is via storm drains or a drainage ditch which flows to this tributary and empties into Berrys Creek and ultimately discharges to the Hackensack River.

Ref. Nos. 4, 11

12. What is the facility slope in percent? (Facility slope is measured from the highest point of deposited hazardous waste to the most downhill point of the waste area or to where contamination is detected.)

The slope of the facility is less than 3 percent.

Ref. Nos. 10, 11

13. What is the slope of the intervening terrain in percent? (Intervening terrain slope is measured from the most downhill point of the waste area to the probable point of entry to surface water.)

The slope of the intervening terrain is 0 to 3 percent.

Ref. Nos. 10, 11

14. What is the 1-year 24-hour rainfall?

The 1-year 24-hour rainfall for the area is approximately 2.75 inches.

Ref. No. 5

15. What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.

The distance to the nearest downslope surface water is approximately 700 ft west of the site.

Ref. Nos. 4, 11

16. Identify uses of surface waters within 3 miles downstream of the site (i.e., drinking, irrigation, recreation, commercial, industrial, not used).

Berrys Creek, which is located about 0.25 mile southeast of the site, is classified as FW2-NT/SE2. Designated uses are primary and secondary contact recreation. Other uses include industrial and agricultural water supply and potable water after treatment as required by law or regulation. Berrys Creek discharges to the Hackensack River, which is classified as SE2. In all SE2 waters, the designated uses are maintenance, migration and propagation of natural and established biota, migration of diadromous fish, maintenance of wildlife, secondary contact recreation, and any other reasonable uses.

Ref. Nos. 12, 14, 15

17. **Describe any wetlands, greater than 5 acres in area, within 2 miles downstream of the site. Include whether it is a freshwater or coastal wetland.**

The USPI site is located in an industrial area and is surrounded by a tidally affected coastal wetland which is greater than five acres in area. The, drainage from the site is via storm drains and a ditch at the rear of the property that discharge to an unamed tributary of Berrys Creek west of the site.

Ref. No. 11

18. **Describe any critical habitats of federally listed endangered species within 2 miles of the site along the migration path.**

There is no critical habitat of a federally endangered species identified within 2 miles of the site.

Ref. No. 13

19. **What is the distance to the nearest sensitive environment along or contiguous to the migration path (if any exist within 2 miles)?**

A coastal wetland exists approximately 500 feet from the site. Drainage from the site is via storm drains and a ditch at the rear of the property that discharge to an unamed tributary of Berrys Creek west of the site.

Ref. Nos. 10, 11

20. **Identify the population served or acres of food crops irrigated by surface water intakes within 3 miles downstream of the site and the distance to the intake(s).**

There are no surface water intakes along Berrys Creek or the Hackensack River within 3 miles downstream of the site.

Ref. No. 8

21. **What is the state water quality classification of the water body of concern?**

Berrys Creek, which is located about 0.5 mile southeast of the site, is classified as FW2-NT/SE2. Designated uses are primary and secondary contact recreation. Other uses include industrial and agricultural water supply and potable water after treatment as required by law or regulation. Berrys Creek discharges to the Hackensack River which is classified as SE2. In all SE2 waters the designated uses are maintenance, migration and propagation of natural and established biota, migration of diadromous fish, maintenance of wildlife, secondary contact recreation,and any other reasonable uses.

Ref. Nos. 12, 14, 15

22. **Describe any apparent biota contamination that is attributable to the site.**

During an off-site reconnaissance conducted by NUS Corp. Region 2 FIT in October of 1989 no apparent biota contamination was observed. However, an on-site inspection conducted by NJDEP in October of 1980 revealed stained soils and a dry streambed with stained vegetation.

Ref. Nos. 4, 10

AIR ROUTE

23. Describe the likelihood of a release of contaminant(s) to the air as follows: observed, alleged, potential, none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.

There is a potential for a release of contaminants to the air. Soils and dry stream beds with black sludge accumulation may contain heavy metals. During dry and dusty conditions, particulates could be released into the air. Solvents which were used for cleaning may have been released to the air due to volitilization. Currently, there is no likelihood of volatile releases since solvent washes were discontinued in August of 1981. It was reported during an inspection by NJDEP in 1981 that open drums were observed. It is not known if these drums contained waste ink or raw materials for processing.

Ref. Nos. 2, 3, 4

24. What is the population within a 4-mile radius of the site?

The population within a 4-mile radius of the site is approximately 259,000.

Ref. No. 16

FIRE AND EXPLOSION

25. Describe the potential for a fire or explosion to occur with respect to the hazardous substance(s) known or suspected to be present on site. Identify the hazardous substance(s) and the method of storage or containment associated with each.

The suspected contaminants are metals such as lead, barium, and chromium. It was reported during an inspection by NJDEP in 1981 that open drums were observed. The contents of these drums are unknown. Previously, solvents were used for cleaning mixing tubs. This practice was discontinued in August of 1981 and the tubs are currently cleaned out with rags. Presently, there is no apparent threat of fire or explosion.

Ref. Nos. 3, 4

26. What is the population within a 2-mile radius of the hazardous substance(s) at the facility?

The population within a 2-mile radius of the site is approximately 52,000.

Ref. No. 16

DIRECT CONTACT/ON-SITE EXPOSURE

27. Describe the potential for direct contact with hazardous substance(s) stored in any of the waste units on site or deposited in on-site soils. Identify the hazardous substance(s) and the accessibility of the waste unit.

There is potential for direct contact with hazardous substances at this site. Waste inks, which may contain heavy metals, were observed accumulated in a dry stream bed. There is no barrier completely surrounding the facility.

Ref. Nos 4, 10

28. How many residents live on a property whose boundaries encompass any part of an area contaminated by the site?

There are no residential properties whose boundaries encompass any part of the site.

Ref. Nos. 10, 11

29. What is the population within a 1-mile radius of the site?

The population within a 1-mile radius of the site is approximately 9,000.

Ref. No. 16

PART IV: SITE SUMMARY AND RECOMMENDATIONS

United States Printing Ink (USPI) is located in an industrial area of East Rutherford, Bergen County, New Jersey, which is surrounded by a tidally affected marshland. A residential area is approximately 0.5 mile to the west. Other businesses are adjacent to the site.

USPI completed and submitted a RCRA Part A application in 1980 as a generator, and treatment, storage and disposal facility (TSDF). The facility also has several air permits and was permitted under NJPDES to discharge to Berrys Creek.

USPI manufactures colored and black inks, primarily for the newspaper industry. All mixing and preparing of inks is done inside the process building. The finished product is sold in containers ranging from 5-gallon pails to bulk tank trucks. USPI discharges noncontact roller mill cooling water to Berrys Creek.

During a hazardous waste investigation conducted by NJDEP in October of 1980, it was reported that approximately 200 drums of ink were stored outside on a permeable surface and that many of the drums were in poor condition and were lacking tops. Directly behind the drum storage area was a dry streambed. The vegetation in the stream was stained black. Black sludge accumulation was noted near and on the stream bank. The off-site migration of waste appeared to be the result of storm runoff. Samples of the waste substances were collected; however, the results of their analyses were not available. A drainage pipe from this stream emptied into a larger stream that is a tributary to Berrys Creek. Also, during the previously noted inspection a small area containing construction/demolition debris was observed. From this investigation, it was recommended that USPI be issued a Notice of Prosecution for disposing solid waste and hazardous waste. It is not known if the notice was issued. On September 16, 1981 NJDEP again inspected USPI and reported that general housekeeping was poor and that spills of various colors from drums and leaking tank trucks were seen throughout the site. The spills were being spread by rain water.

A **MEDIUM PRIORITY** screening site inspection is recommended for the USPI site. This recommendation is based on the following:

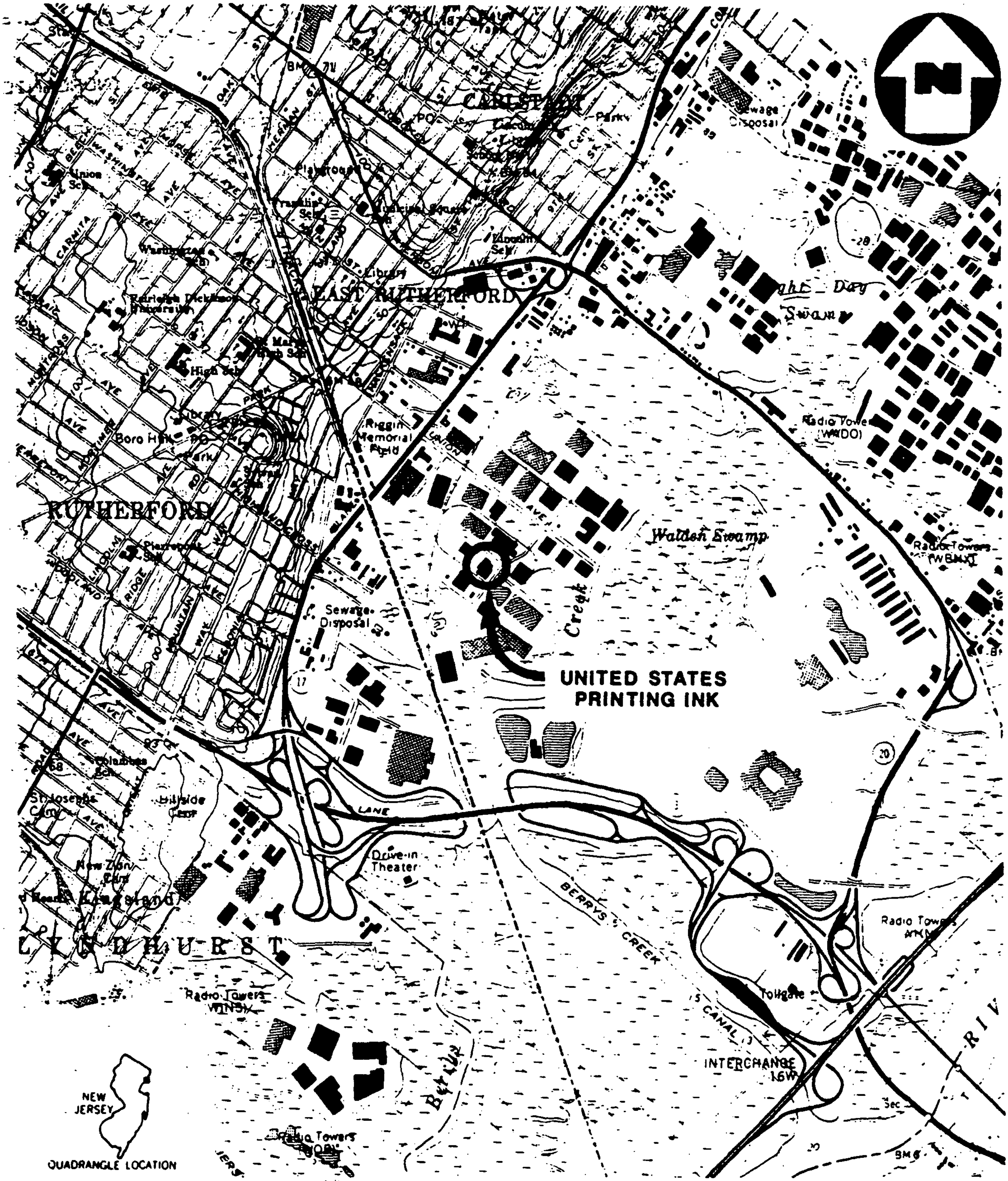
- There is a potential for direct contact with hazardous substances since there are no barriers in place to limit access to the area.
- Documentation indicates that there were several areas of stained soil and poor housekeeping practices. Off-site migration of wastes to a nearby dry streambed has been documented during an inspection by NJDEP.
- Surface water runoff from contaminated soils could potentially migrate to nearby sensitive environments.
- Contaminated soils could potentially become airborne during dry and dusty conditions. There are approximately 9,000 people, five schools, and two parks located within a 1-mile radius of the site.

ATTACHMENT 1

UNITED STATES PRINTING INK

EAST RUTHERFORD, NEW JERSEY

CONTENTS



(QUAD) WEEHAWKEN, N.J.-N.Y.

SITE LOCATION MAP

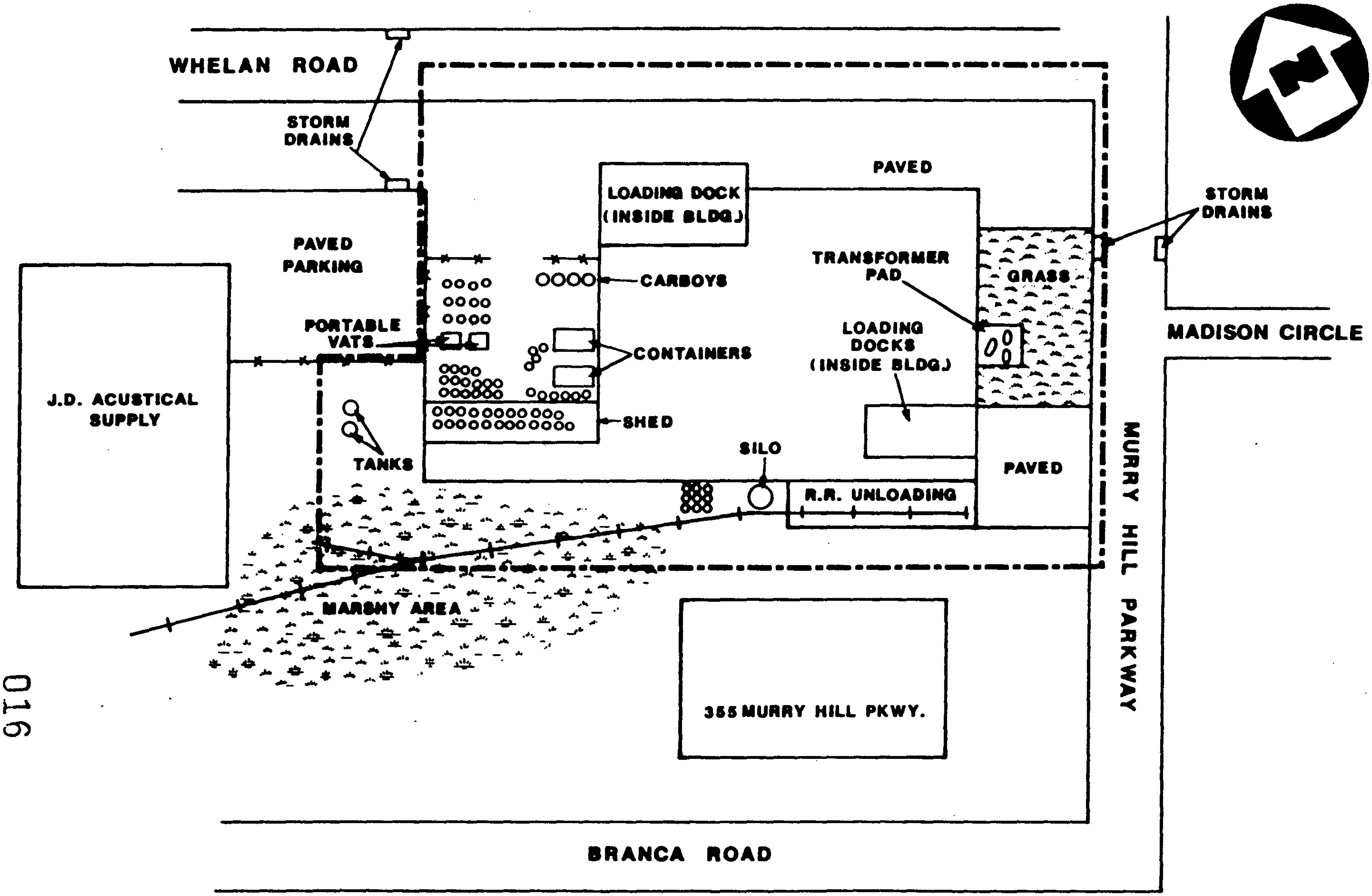
UNITED STATES PRINTING INK

EAST RUTHERFORD. N.J.

SCALE: 1" = 2000'

FIGURE 1

015



016

LEGEND

APPROX. PROPERTY BOUNDARY FOR U.S. PRINTING INK

DRUMS

FIGURE 2

SITE MAP

UNITED STATES PRINTING INK, E. RUTHERFORD, N.J.

NOT TO SCALE

NUS CORPORATION

02-8910-32-PA
Rev. No. 0

EXHIBIT A

PHOTOGRAPH LOG

UNITED STATES PRINTING INK
EAST RUTHERFORD, NEW JERSEY

OFF-SITE RECONNAISSANCE: DECEMBER 15, 1989

*Note: Pictures taken during off-site reconnaissance performed on October 26, 1989 did not come out. Pictures retaken on December 15, 1989.

UNITED STATES PRINTING INK
EAST RUTHERFORD, NEW JERSEY
DECEMBER 15, 1989

PHOTOGRAPH INDEX

ALL PHOTOGRAPHS TAKEN BY TONY CULMONE

Photo Number	Description	Time
1P-10	View from Murray Hill Parkway looking west at front of building.	0755
1P-11	View of drum storage area from Whelan Road.	0757
1P-12	View of additional drums from Whelan Road.	0759
1P-13	View from Branca Road of tanks at rear of building.	0801
1P-14	View of southside of facility from Branca Road, behind 375 Murray Hill Parkway.	0803
1P-15	View of southeast corner of building showing loading docks, transformer and railroad tracks.	0805

UNITED STATES PRINTING INK, EAST RUTHERFORD, NEW JERSEY

1P-10 December 15, 1989 0755
View from Murray Hill Parkway looking west
at front of building.

1P-11 December 15, 1989

UNITED STATES PRINTING INK, EAST RUTHERFORD, NEW JERSEY

1P-12 December 15, 1989 0759
View of additional drums from Whelan Road.

1P-13 December 15, 1989 0801
View from Branca Road of tanks at rear of building.

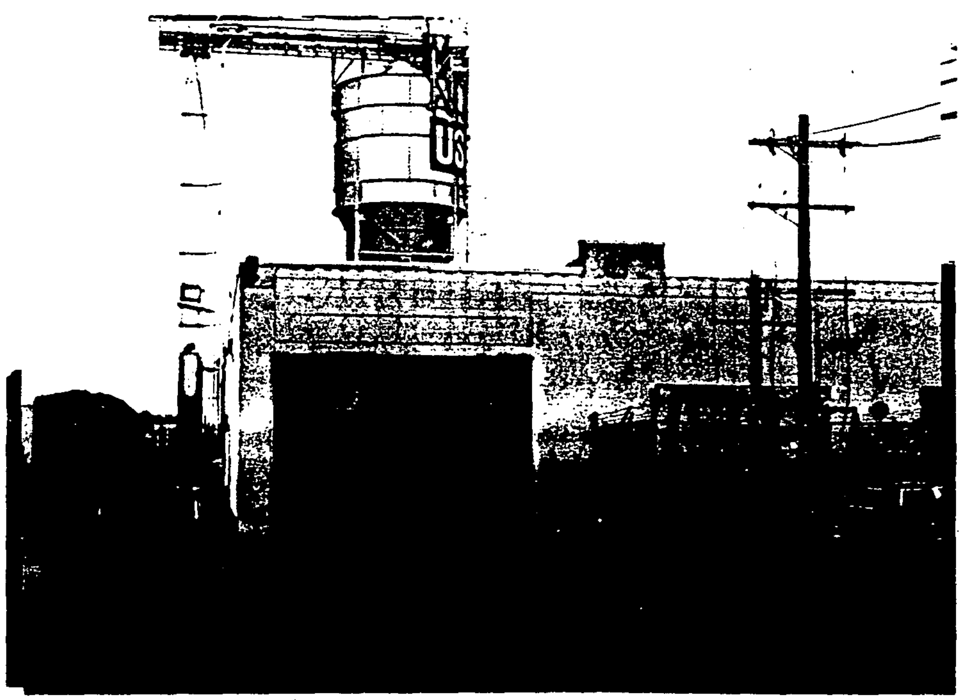
NUS CORPORATION

02-8910-32-PA
Rev. No. 0

UNITED STATES PRINTING INK, EAST RUTHERFORD, NEW JERSEY

1P-14 | December 15, 1989 | 0803

View of southside of facility from Branca Road, behind 375 Murray Hill Parkway.



1P-15 | December 15, 1989 | 0805

View of southeast corner of building

ATTACHMENT 2

REFERENCES

1. U.S. EPA Hazardous Waste Permit Application, EPA Form 3510-3, United States Printing Ink, November 13, 1980.

2. HWDMS Master Facility Listing, New Jersey Department of Environmental Protection, (NJDEP), United States Printing Ink.

3. RCRA Generator Inspection Report, NJDEP, United States Printing Ink, September 16, 1981.

4. Hazardous Waste Investigation, NJDEP, United States Printing Ink, October 31 and November 11, 1980.

5. Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.

6. Federal Register, Volume 49, No. 16, January 24, 1984, 2943, Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, New Jersey; Final Determination.

7. Olsen, Paul E. The latest Triassic and Jurassic Formations of the Newark Basin (Eastern North America, Newark Supergroup): Stratigraphy, Structure and Correlation. New Jersey Academy of Sciences Bulletin, Vol. 25, No. 2, Pages 25-51, 1980.

8. Project Note: From A. Culmone, to D. Cohen, (both of NUS Corp.) Subject: Clarification of telecon information for Bergen County EPI Sites, October 31, 1989.

9. Water withdrawal points within 5.0 miles of Lat, 40° 47' 31"N and Long. 74° 06' 12"W. Division of Water Resources, Bureau of Water Allocation, N.J. Dept. of Environmental Protection, October 18, 1988.

10. Preliminary Assessment Off-Site Reconnaissance Information Reporting Forms, United States Printing Ink, TDD No. 02-8910-32, NUS Corp. Region 2 FIT, Edison, New Jersey, October 26, 1989 and December 15, 1989.

11. Three-Mile Vicinity Map based on the U.S. Dept. of the Interior, Geological Survey Topographic Maps, 7.5 minute series, "Weehawken, NJ" Quadrangle, 1967, revised 1981 and "Orange, NJ" Quadrangle, 1966, revised 1979.

12. Proceedings of the AWRA Symposium on Coastal Water Resources, Wilmington, NC, May 1988.

13. Atlantic Coast Ecological Inventory, Newark, NJ-NY-PA, U.S. Fish and Wildlife Service, 1980.

14. NJDEP, Division of Water Resources, Surface Water Quality Standards, NJAC 7:9-4, Index D, July 1985.

15. State of New Jersey, New Jersey Administrative Code, Title 7, Department of Environmental Protection, Transmittal No. 1988-5, pp. 9-106 and 9-107, May 16, 1988.

16. General Sciences Corp., Graphical Exposure Modeling System (GEMS), Landover, Maryland, 1986.

17. Wagner, Travis. The complete handbook of hazardous waste regulations, Perry-Wagner Publishing Co., 1988.

REFERENCES (CONT'D)

18. Expanded Site Inspection Report, Industrial Latex Site, NUS Corp. Region 2 FIT, January 21, 1988, TDD No. 02-8903-76.

19. Census of Population, General population characteristics of New Jersey, U.S. Dept. of Commerce, Bureau of the Census, 1980.

20. Department of Environmental Protection, Well record, Marathon Enterprises, E. Union Ave, Rutherford, N.J., February 10, 1980.

21. Telecon Note: Conversation between Bob Siery, Wallington Department of Public Works and Peter Babich, NUS Corp., February 7, 1990.

REFERENCE NO. 1

(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

F N J D 0 9 5 1 7 1 9 4 8

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below.)*

C 8 — YR. 6 4 — MO. 0 4 — DAY 0 1 — FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

YR. — MO. — DAY — FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. **PROCESS DESIGN CAPACITY** — For each code entered in column A enter the capacity of the process.

1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C — DUP — T/A C — 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. 1. AMOUNT (specify)	B. 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. 1. AMOUNT	B. 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	1,650000	G		7				
2					8				
3					9		026		
4					10				

EPA Form 3510-3 (6-80)

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER — Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

027

continued from page 2.

NOTE: Photocopy this page before completing if have more than 26 wastes to list.

I. EPA I.D. NUMBER (enter from page 1)	T/A	C	FOR OFFICIAL USE ONLY	T/A	C	
W NJD 0 9517 1948	3	1	W DUP	3	2	DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	K 0 8 6	12 000	T	S01				
2	D 0 0 5	500000	P	S01				
3	D 0 0 8	1,800 000	P	S01				
4	D 0 0 7			S01				Included with above
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTE (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

F6: A/55 F6: A/56

EPA I.D. NO. (enter from page 1)

F NJD0 9517 1948 T/A 5 C 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)	LONGITUDE (degrees, minutes, & seconds)
40 49 130	074 05 335

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. (area code & no.)
E ~~Millmaster Onyx Group Kewanee Ind., Inc.~~	212 687 2757

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F 99 Park Avenue	G New York,	NY	10016

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
Irving Gaines		11/12/80

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

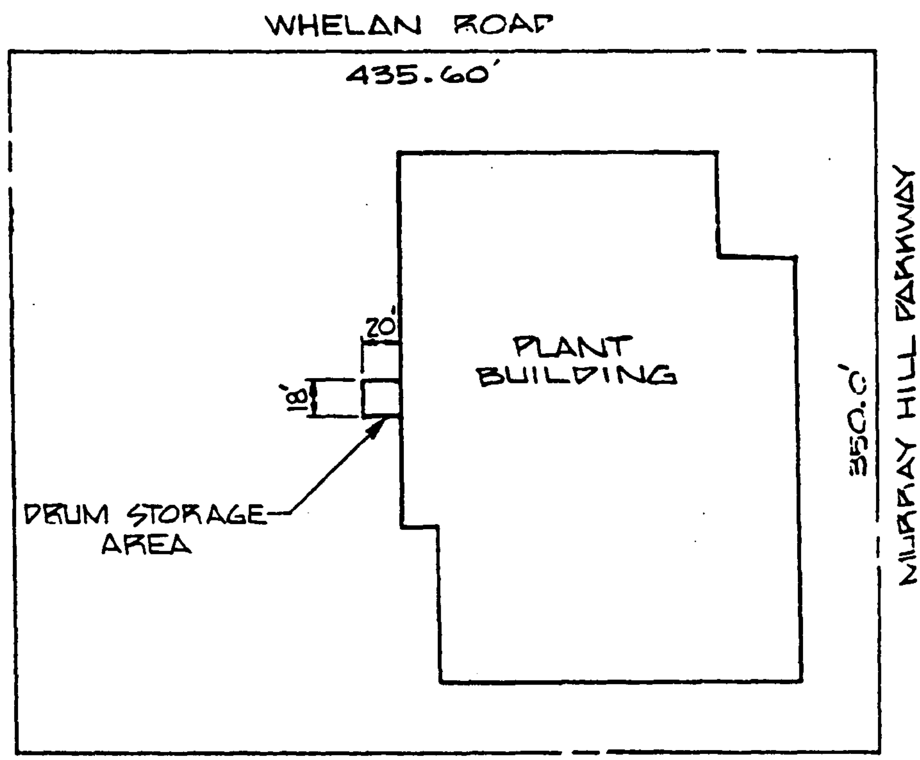
029

A. NAME (print or type)	B. SIGNATURE	C. DATE SIGNED
Robert W. Schmidt	Robert W. Schmidt	11/13/80

Continued from page 4.

EPA I.D. #NJD095171948

V. FACILITY DRAWING *(see page 4)*



PLOT PLAN
UNITED STATES PRINTING INK COMPANY
E. RUTHERFORD, N.J.
SCALE: 1" = 100.0'

REFERENCE NO. 2

NJD095171948 UNITED STATES PRINTING INK /83

343 MURRAY HILL PARKWAY
EAST RUTHERFORD NJ 07073 CLOSURE DATE:
201/933/7100

003 DISTRICT: BASIN: LATITUDE: 404913.0 LONGITUDE: 07405

: COMMERCIAL: NON-REGULATED: OWNER TYPE: P FACILITY TYPE: GEN TSDF

OWNER ADDRESS		OPERATOR ADDRESS	
MILLMASTER ONYX GROUP KEWANEE IND., INC.		U.S. PRINTING INK CORPORATION	
99 PARK AVENUE		343 MURRAY HILL PARKWAY	
07073 NEW YORK	NY 10016	EAST RUTHERFORD	NJ 07073
212/687-2757		201/933-7100	

NOTIFICATION DATA

PERMIT STATUS: 1
NOTIFICATION RECEIVED: 8/15/80
NOTIFICATION ACKNOWLEDGED: 10/09/80
PART A RECEIVED: 11/19/80
(1) PART A ACKNOWLEDGED: 1/15/81
(2) PART A ACKNOWLEDGED:

PERMITS

TYPE	NUMBER
Y	00705
N	NJ0003646

DESIGN CAPACITY

PROCESS	AMOUNT	UNIT
S01	1650.000	G

032 TRANSPORTATION

WASTE DESCRIPTION

	MT	PROCESSES:	
	MT	PROCESSES:	
.226	MT	PROCESSES:	S01
	MT	PROCESSES:	S01
.816	MT	PROCESSES:	S01
10.886	MT	PROCESSES:	S01

COMMENTS

157	820310	10.12356 W
451	810916	GEN-TSD

...ME: ... NJD095171948 UNITED STATES PRINTING INK

343 MURRAY HILL PARKWAY
EXISTANCE DATE: 4/01/61 EAST RUTHERFORD NJ 07073 CLC
201/933/7100

COUNTY: BERGEN 003 DISTRICT: BASIN: LATITUDE: 404913.0

FACILITY STATUS: 1 MODIFY/CONSTRUCT: COMMERCIAL: NON-REGULATED: OWNER TYPE: P FACILITY TYPE

MAILING ADDRESS	OWNER ADDRESS	OPERATOR AD
SCHMIDT ROBERT REGIONAL MGR	MILLMASTER ONYX GROUP KEWANEE IND., INC.	U.S. PRINTING
343 MURRAY HILL PARKWAY	99 PARK AVENUE	343 MURRAY HIL
EAST RUTHERFORD NJ 07073	NEW YORK NY 10016	EAST RUTHERFOR
	212/687-2757	201/933-

INDICATORS		NOTIFICATION DATA		PERMITS	
CONFIDENTIALITY NOTIF : 0		PERMIT STATUS: 1		TYPE	NUMBER
CONFIDENTIALITY PART A : 0		NOTIFICATION RECEIVED: 8/15/80			
NATURE BUSINESS IND : A		NOTIFICATION ACKNOWLEDGED: 10/09/80		Y	00705
MAP STATUS IND : A		PART A RECEIVED: 11/19/80		N	NJ0003646
DRAWING STATUS IND : A		(1) PART A ACKNOWLEDGED: 1/15/81			
PHOTO STATUS IND : A		(2) PART A ACKNOWLEDGED:			
INDIAN LAND IND : N					
OWNER/OPERATOR IND : N					

033

SIC CODES TRANSPORTATION

2893

WASTE DESCRIPTION

WASTE CODE: D000	ESTIMATED AMOUNT:	MT	PROCESSES:
WASTE CODE: D003	ESTIMATED AMOUNT:	MT	PROCESSES:
WASTE CODE: D005	ESTIMATED AMOUNT:	.226 MT	PROCESSES: S01
WASTE CODE: D007	ESTIMATED AMOUNT:	MT	PROCESSES: S01
WASTE CODE: D008	ESTIMATED AMOUNT:	.816 MT	PROCESSES: S01
WASTE CODE: K086	ESTIMATED AMOUNT:	10.886 MT	PROCESSES: S01

COMMENTS

157	820310	10.12356 W
451	810916	GEN-TSD

REFERENCE NO. 3

RCRA GENERATOR INSPECTION FORM

COMPANY NAME:
US Printing Ink Corp.

EPA I.D. NUMBER:
NJD00951747248

COMPANY ADDRESS:
343 Murry Hill Parkway E. Rutherford, NJ.

COMPANY CONTACT OR OFFICIAL:
Herb L. Edelman

INSPECTOR'S NAME:
Alphonse Iannuzzi Jr.

TITLE:
Vice President operations.

BRANCH/ORGANIZATION:
NJDEP

CHECK IF FACILITY IS ALSO A TSD FACILITY / /

DATE OF INSPECTION:
9-16-81

	YES	NO	DON'T KNOW
(1) Is there reason to believe that the facility has hazardous waste on site?	X		

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

/ / Company admits that its waste is hazardous during the inspection.

/X/ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

/ / The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)

/ / The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)

/ / The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)

/ / EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

/X/ Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

Facility claims waste inks as non-hazardous [illegible]
however waste tub wash ~~[illegible]~~ is hazardous K086.

	YES	NO	DON'T KNOW
b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials?	X		

Please explain:

- waste Inks may be hazardous waste; company claims that this material is not hazardous. Inks intended to be reworked may be waste.

c. Identity the hazardous wastes that are on-site, and estimate approximate quantities of each.

Approx. 24 drums 55 gallon capacity - K086 - tub wash water waste NaOH solution.
5 drums 55 gallon capacity - pigments from air pollution
4 drums 55 gallon capacity - wst. Ink collection bag.
500 gal. waste ink storage tank.

d. Describe the activities that result in the generation of hazardous waste.

1) Washing of tubs containing inks with caustic → K086, facility has recently stopped using tub washer and does not generate this waste any more. ~~any similar flour waste waste~~
2) off-spec ink, 3) bag collection solids (dust) pigment

	YES	NO	DON'T KNOW
(2) Is hazardous waste stored on site?	X		

a. What is the longest period that it has been accumulated?

Mr. Edelman is not sure what the longest period of storage was.

	YES	NO	DON'T KNOW
b. Is the date when drums were placed in storage marked on each drum?		X	
(3) Has hazardous waste been shipped from this facility since November 19, 1980?	X		

a. If "yes," approximately how many shipments were made?

35

(4) Approximately how many hazardous waste shipments off site have been made since November 19, 1980?

35

	YES	NO	DON'T KNOW
a. Does it appear from the available information that there is a manifest copy available for each hazardous waste shipment that has been made?		X	

Prior to 11-24-80 facility did not manifest waste ink.

b. If "no" or "don't know," please elaborate.

All materials (inks) have been manifested since 11-24-80

	YES	NO	DON'T KNOW
c. Does each manifest (or a representative sample) have the following information?			
– a manifest document number	X		
– the generator's name, mailing address, telephone number, and EPA identification number	X		
– the name, and EPA identification number of each transporter	X		
– the name, address and EPA identification number of the designated facility and an alternate facility, if any: 3 NJD0017199 (2/18/81) no facility name		X	
– a description of the wastes (DOT) description varies (i.e. Dirty oil, Waste oil NOS) improper DOT shp. name	X		
– the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle	X		
– a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA	X		
re there any hazardous wastes stored on site at the time he inspection?	X		
If "yes," do they appear properly packaged (if in containers) or, if in tanks, are the tanks secure?		X	

3 (5/23/81) name

76 (6/17/81)

uncovered drums, spills   Most drums were properly labeled and packaged.

If not properly packaged or in secure tanks, please xplain.

n, plant manager stated that the 2 unlabeled drums were completed today.

	YES	NO	DON'T KNOW
e containers clearly marked and labelled?		X	
any containers appear to be leaking?		X	

most are labeled 2 will be labeled today + dated.

"yes," approximately how many? 4 unlabeled drums mr. Hawn stated was waste black ink were noted.

*(6) Has the generator submitted an annual report to EPA covering the previous calendar year? N/A

a. How do you know?

(7) Has the generator received signed copies (from the TSD facility) of all manifests for wastes shipped off site more than 35 days ago?

a. If "no," have Exception Reports been submitted to EPA covering these shipments? will submit report to EPA in near future.

)0005578 (11/24/80) 3) NJ 0005550 (12/10/80) 005535 (1/2/81) 4) NJ 6027870 (4/6/81) 5) NJ0027871 (4/6/81) no Gen. reciept.

(8) General comments.

US Printing Ink is a manufacturer of news paper inks. ...eir main product is black newspaper ink. Processes include ...lending and dispearcing pigments. Colored inks are produced for the comic ...ctions of news paper. Colored ink pigments contain metals, such as lead, cromium, ...d barium. All inks contain an oil or varnish base.

Wastes produced include off spec inks, sodium hydroxide (NaOH) ...ash waste, and pigments from air pollution collection bags. USPI does ...ot consider it's black ink as a hazardous waste. NaOH wash waste ...is produced from cleaning mixing tubs in pot washer. This device is not used any more (as of 1 month ago), mixing tubs are cleaned out with rags which are ...eturned to cleaning company. Approximatly 1 drum of NaOH was ...roduced per month. Waste Ink samples were analyzed for EP toxicity by USPI ...d were not exceeding the established limits (analysis is attached).

Manifest check indicated that USPI manifested waste ink off site ...tarting 11-24-80. manifests indicated that this material was listed as ...oil not waste Ink; Facilities that accepted this material ...ere Oil Recovery Clayton, NJ, Noble Oil, NJ. and Casie Enterprise, NJ.

* The effective date for this requirement is March 1, 1982.

All of these facilities are not permited by NJDEP to recieve waste inks. Some manifests (3) did not contain the name of the facility

Observations and/or Other Comments

that the waste material was going to be disposed at some
manifest #'s include NJ0005550 (10/10/80), NJ0005538 (11/24/80) to
Noble. Mr. Edelmann stated that USPI does not accept waste
from it's customers, however, on a 9-14-81 visit to USPI Mr.
Schmidt and Baker stated that they did take waste inks from
customers and did not remember the company names.

Facility inspection indicated that one (1,000 gal) tank
was ½ filled with black ink recently filled from drums.
This will be removed within one week. Twenty four drums
of hazardous waste (21 NaOH, 3 pigments) were noted in
specified storage area. Forty unlabeled drums of off
spec inks intended to be reworked were also noted.
Two drums labeled Dry waste in crayon without accumulation
dates were noted. These drums will be labeled and dated
today. Two 55 gallon drums were also not labeled. Four
unlabeled drums of waste black ink were noted next to
the 2 waste ink tanks. Pails and drums without
tops were noted next to the waste ink tanks overflowing
from rain water onto the soil. Five additional
drums of waste black ink and water were noted
near the stream in rear of facility. Only one of
these drums were labeled. Other drums containing inks
were noted uncapped and have collected water.

General housekeeping in rear of facility was poor.
Spills were noted throughout the lot on soil. Spills
were green, blue, and red. Some black sludges were also
noted on soil. Spills were being spread by rain
water. USPI has plans to cover all spilled

Inspector's Signature

Facility Operator's Signature

Observations and/or Other Comments

Material with stone, rather than remove contaminated soils. This is due to this material being considered a solid waste by USPI.

Nine photographs of spills and poor housekeeping practices were taken. Samples of ink material was taken at a previous DEP investigation.

Inspector's Signature

Facility Operator's Signature

REFERENCE NO. 4

HAZARDOUS WASTE INVESTIGATION

Inspector: Alphonse Iannuzzi Date: 10/31 and 11/11/80

Location: ✓ United States Printing Ink

St: 343 Murray Hill Parkway

Town: East Rutherford 07073

County: Bergen

Lot: 4C - Block: 106A

Origin of Complaint:

Complaint: Investigate waste storage, disposal practices, mixing of waste for use as fuel supplement.

Findings:

On the above dates I investigated US Printing Ink (USPI) at the above address. Information was supplied mainly by Mr. Hawn, Production Manager. Contact was made with Mr. Edelman, Vice President of operations, and Mr. Leiner, Chief Engineer. USPI is a division of Mill Master Onyx and is affliiated with Gulf Oil Co.

USPI manufactures colored and black inks that have an oil and varnish medium. Pigments are mixed into the medium at the plant in mixing pots and roller mills (air pollution permits for mills and storage tanks are attached). A large part of their business is the production of newspaper ink called carbon black (approximately 60% oil). USPI occasionally handles inks that contain heavy metals. All mixing and preparing of inks is done inside the building. Product is sold in containers ranging from 5 gallon pails to bulk trucks (they own several tank trucks). USPI has a NPDES permit for discharging into Berry's Creek for non contact roller mill cooling water. This permit and a NJDEP water resources report concerning this discharge is attached.

Inside the process building is a pot cleaner used to wash out mixing containers. Mr. Hawn stated that the wash water is being collected in drums that are stored outside in the yard. In the back lot there is a large garbage compactor used for domestic waste. The roll off that contains this waste is owned by Zeppetelli Inc., Moonachie, NJ. Several small drums containing ink resin were noted in this roll off. Mr. Hawn was told that he would have to wash out all resin prior to disposal. He did not believe that he was subject to washing out the drums and declined to do so.

Also in the back lot there was approximately 200 drums of ink that Mr. Hawn said would be reworked. They were stacked 3 high and were located on a permiable surface. The housekeeping in this area was very poor. Many drums were in poor condition and were lacking tops. Precipitation could easily cause the material to overflow into a near by stream. Accumulated sludges were noted on the ground and on the drums. Directly behind the drum storage area was a dry stream bed. The vegetation inside the stream was stained black. Drums are stored right on the stream bank. Black sludge accumulation was noted on and next to the stream bank. This material was most likely generated from a drum. The lowest point of this stream contained a black liquid. A drainage pipe from this stream emptied into a larger stream that is a tributary to Berry's Creek. This stream contained a 6'x4' area of black liquid similar to black ink. It was contained by two screens and some absorbant. Mr. Hawn stated that the stream is periodically cleaned and the material is disposed of with domestic waste. Two waste ink tanks in the yard were noted. Mr. Hawn stated that this ink is hauled by Ned's Waste Oil, PO Box 375, Newton, NJ (201-383-2459). No special waste manifest was used for the shipping and disposal of this waste. Mr. Hawn was informed that this material must be accompanied with a special waste manifest and should be hauled by a registered special waste hauler to a registered facility. He was given a list of state approved facilities and a manifest.

Split samples were taken of the 1) stream with black material (A0333 & B0333), 2) composite sample of small stream with black liquid and black sludge next to stream (A0334 & B0334), 3) black ink from storage tank inside building (A0335 & B0335), and 4) a control sample of stream not containgin any black liquid approximately 10 yards down stream from the second screen (A0336 & B0336).

A small landfill in the marshes on USPI's property was noted. It consisted of large blocks of cement, paper and other domestic waste. Mr. Hawn stated that he did not know who dumped this material. Some tank trailers owned by USPI were noted north of this landfill. Some ink was spilled from one of the trailers. Only the north side of the facility contained a fence.

Mr. Hawn indicated that USPI has a warehouse in Carlstadt that will be closed down at the end of the year (1980). Waste ink is not burned as a fuel supplement since the boiler runs on gas. USPI did not think that the ink they handle is a hazardous material. I asked Mr. Edelman to send a list of the constituents in of all their inks, he declined to do so because he considered this perprietory information.

USPI has a quality control lab. They were compiling a drum of waste solvent. Mr. Hawn stated that this material is used to clean up spills inside of the building by placing it on rags.

Mr. Hawn was instructed to clean up any spills or accumulated sludge material immediately, not to dispose drums or any material that has contacted ink as domestic waste and to improve the drum storage area on 10/31/80. A return visit to USPI on 11/11/80 indicated very little change in conditions.

Alphonse Iannuzzi Jr.
Alphonse Iannuzzi

cc: Moxon Tan, Supervisor of Field Operations,
Passaic-Hackensak Basin Water Pollution Control.
Meadowlands Development Commission, Building Inspector.
NJDEP Water Resources, Region II.

Recommendations

Confidential

Investigation of USPI, E. Ruthford, indicated several environmental problems. It is highly recommended that USPI be issued a Notice of Prosecution for violation of NJAC 7:26-2.2.2(b) and 2.2.2(c) for disposing solid waste (landfill) and hazardous waste (accumulated sludges, spill into creek) without filing a registration statement to the Bureau and without first obtaining Department approval of the registration statement.

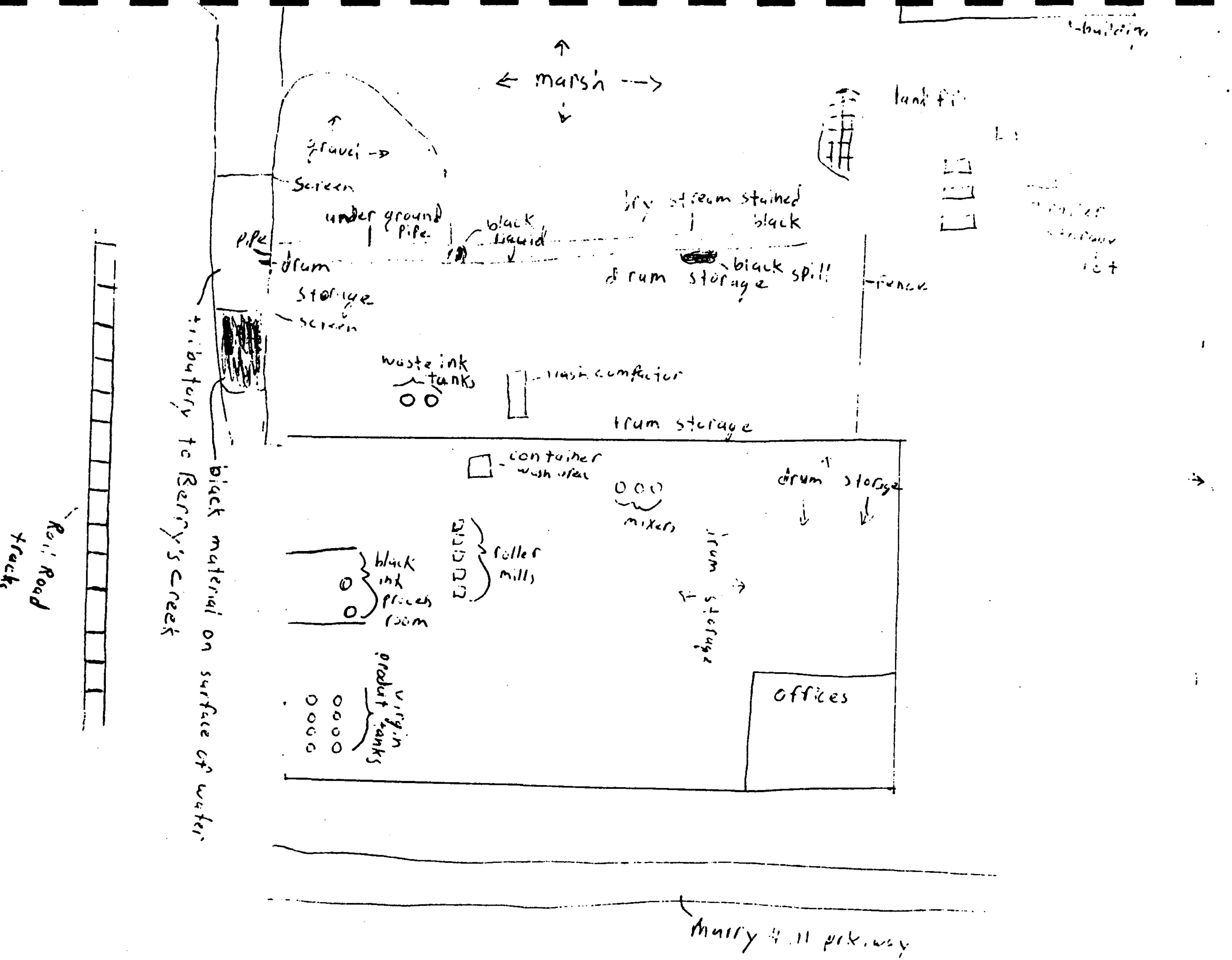
A NOP should also be issued to USPI for violation of NJAC 7:26-7.4(a) for not completing a special waste manifest for the shippment of waste ink off site. A NOP should be issued to Ned's Waste Oil, Newton, NJ for violation of NJAC 7:26-7.5(a) for hauling special waste without a manifest.

It is also recommended that a letter be sent to USPI from the Bureau stating that 1) clean up should start immediately (excavation of soil and gravel), 2) a list of constituents of their ink be sent to the Bureau immediately, 3) improvement of the drum storage area, preferably a diked cement pad with a sump and cementing of the storage lot, be enacted (I spoke with the building inspector of the Meadowlands Development Commission and he stated that this would be permitted), 4) a fence should be placed around the storage lot. Any material that comes in contact with ink should not be disposed of with domestic waste (i.e. drums containing ink resin in roll off). A follow up investigation within 4 months should be enacted.

Alphonse Iannuzzi Jr.

Alphonse Iannuzzi

045



marsh
gravel
Screen
under ground pipe
black liquid
dry stream stained black
pipe
drum storage
screen
drum storage
black spill
fence
land fill
waste ink tanks
trash compactor
drum storage
container wash area
mixers
drum storage
drum storage
roller mills
black ink process room
offices
virgin product tanks
Rail Road tracks
black material on surface of water
tributary to Berry's Creek
Murray Hill pkwy

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
P.O. Box 2809 Trenton, N.J. 08625

DISCHARGE SURVEILLANCE REPORT

PERMIT #: NJ 000 3646 NO. OF DISCHARGES: one (1) CLASS: MIN - IND.

DISCHARGER: UNITED STATES PRINTING INK CORP.

OWNER: Sub. of Millmaster Onyx Corp

MUNIC: East Rutherford COUNTY: Bergen WATERSHED CODE: H

LOCATION: 343 Murray Hill Parkway

RECEIVING WATERS: Storm sewer → Berry's Creek STREAM CLASS: FW - 3

LIC. OPERATOR & PLANT CLASS: "NA"

TRAINEE/ASST: "NA" OTHER INFO: (201) 933-7100

MAJOR DEFICIENCIES NOTED:

-NONE-

OVERALL RATING: ☑ Acceptable ☐ Conditionally Acceptable ☐ Unacceptable

EVALUATOR: ARMANDO A. ARCENAL TITLE: ASST. ENV'L. ENG'R.

INFORMATION FURNISHED BY: (name) WILLIAM DUNPHY

(title) ANALYTICAL GROUP LEADER (organization) U.S. Printing Ink Corp.

046

DATE OF INSPECTION: Jan. 16, 1980

Permit #: NJ 0003646
Date: January 16, 1980

INDUSTRIAL TREATMENT PROCESS EVALUATION

= Satisfactory M = Marginal U = Unsatisfactory NA = Not Applicable

	RATING	COMMENTS
001	---	
RCE(S)	---	Non-contact cooling water from paint roller mills & grinder.
OPERATION	---	16-hour operation
LOWS	-	
	-	
	-	
SUPPLY	-	
		Filter water intake through small mesh filter.
	S	residues & solids carted by Zeppetelli, Moonachie
DER	NA	
	S	
ES	S	
BY	S	AQUA ASSOCIATES INC., West Caldwell
duct	-	Printing inks for newspapers, magazine, etc.
Employees	-	100 (2 shifts)
ARENCE	S	Clear
ENCE	S	Clear

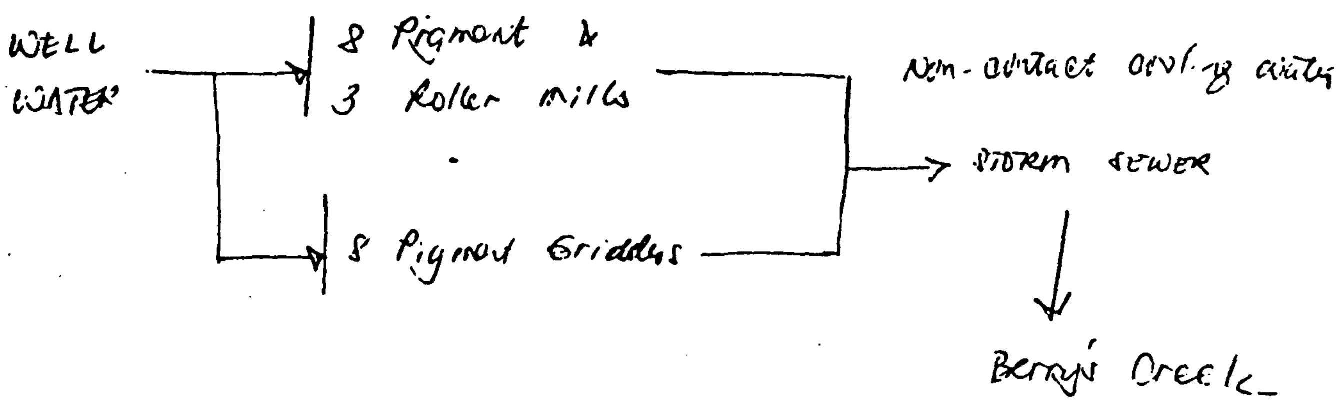
047

UWH-053

N.J.D.E.P.
D.W.R.
DISCHARGE SURVEILLANCE REPORT

Permit #: NJ 0003646
Date: Jan 16, 1978

PLANT DIAGRAM AND FLOW SEQUENCE: 001



SAMPLING PERIOD: ____________ COMPOSITE INTERVAL: None

DISCHG	PARA	SAMPLE TYPE	PERMIT LIMITS	SAMPLE RESULT	DISCHG	PARA	SAMPLE TYPE	PERMIT LIMITS	SAMPLE RESULT
	– NO SAMPLES TAKEN –								

048

#14

Permit No. NJ 0003646

MAY 18 1979

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et seq; the "Act"),

United States Printing Ink., Corporation

is authorized to discharge from a facility located at

343 Murray Hill Parkway
East Rutherford, New Jersey 07073

to receiving waters named

Berry's Creek

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on August 1, 1979.

This permit and the authorization to discharge shall expire at midnight, August 1, 1983.

By authority cf Eckardt C. Beck, Regional Administrator.

Signed this 14 day of May 1979

Meyer Scolnick, Director
Enforcement Division

Form VEM-025 T
1/79

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR DIRECT)

Permit and Certificate Number 0 4 3 6 4 4   DEP Plant ID 0 0 7 0 5

(Mailing Address)
United States Printing Ink
343 Murray Hill Parkway
E. Rutherford, N.J. 07073

(Plant Location)
(Same)
Bergen County

Applicant's Designation of Equipment St. Tank #3 Varnish Ink

N.J. Stack No. 0 0 1   No. of Stacks 0 1   No. of Sources 0 0 1

Approval 8 (Mo.) 3 (Day) 79 (Year)   Start Up ____ (Mo.) ____ (Day) ____ (Year)   Expiration 8 (Mo.) 3 (Day) 84 (Year)

THIS PERMIT AND PERMANENT (5 YEAR) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A. 26:2C-9.2), AND IS BEING ISSUED WITHOUT A FIELD INSPECTION. HOWEVER, FIELD INSPECTIONS ARE SCHEDULED FOR THE FUTURE AND APPROPRIATE ACTIONS WILL BE TAKEN IF SUCH INSPECTIONS DISCLOSE DEVIATIONS FROM YOUR APPLICATION.

YOU MAY BE ENTITLED TO AN EXEMPTION OF TAXATION IF YOUR EQUIPMENT IS TAXED AND IS CONSIDERED TO BE AN AIR POLLUTION ABATEMENT FACILITY. A TAX EXEMPTION APPLICATION MAY BE OBTAINED FROM THIS SECTION.

IF IT IS NECESSARY TO AMEND YOUR EMERGENCY STANDBY PLANS, PLEASE CONSULT WITH THE APPROPRIATE FIELD OFFICE. (SEE OTHER SIDE)

QUESTIONS ABOUT THIS DOCUMENT SHOULD BE DIRECTED TO THE PERMITS AND CERTIFICATES SECTION AT 609 - 292 - 6716 OR THE ADDRESS BELOW.

NOTE: This document must be readily available for inspection at the source location.

Approved by: Gary Pierce Gary Pierce
Supervisor
Permits & Certificates Section

N.J. Department of Environmental Protection
Bureau of Air Pollution Control
CN-027

orm VEM-025 T
79

AUG 22 1979

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR DIRECT)

Permit and Certificate Number 0 4 3 6 4 5 DEP Plant ID 0 0 7 0 5

(Mailing Address)

United States Printing Ink
343 Murray HillParkway
East Rutherford, N.J. 07073

(Plant Location)

(Same)
Bergen County

Applicant's Designation of Equipment St. #1 2 Roller Mills

.J. Stack No. 0 0 2 No. of Stacks 0 1 No. of Sources 0 0 2

pproval 8 3 79 (Mo. Day Year) Start Up (Mo. Day Year) Expiration 8 3 84 (Mo. Day Year)

THIS PERMIT AND PERMANENT (5 YEAR) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A. 26:2C-9.2), AND IS BEING ISSUED WITHOUT A FIELD INSPECTION. HOWEVER, FIELD INSPECTIONS ARE SCHEDULED FOR THE FUTURE AND APPROPRIATE ACTIONS WILL BE TAKEN IF SUCH INSPECTIONS DISCLOSE DEVIATIONS FROM YOUR APPLICATION.

YOU MAY BE ENTITLED TO AN EXEMPTION OF TAXATION IF YOUR EQUIPMENT IS TAXED AND IS CONSIDERED TO BE AN AIR POLLUTION ABATEMENT FACILITY. A TAX EXEMPTION APPLICATION MAY BE OBTAINED FROM THIS SECTION.

IF IT IS NECESSARY TO AMEND YOUR EMERGENCY STANDBY PLANS, PLEASE CONSULT WITH THE APPROPRIATE FIELD OFFICE. (SEE OTHER SIDE)

QUESTIONS ABOUT THIS DOCUMENT SHOULD BE DIRECTED TO THE PERMITS AND CERTIFICATES SECTION AT 609-292-6716 OR THE ADDRESS BELOW.

NOTE: This document must be readily available for inspection at the source location.

Approved by: Gary Pierce Gary Pierce
Supervisor
Permits & Certificates Section

051

.J. Department of Environmental Protection
eau of Air Pollution Control
-027

Form VEM-025 T
1/79

AUG 22 1979

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (5 YEAR DIRECT)

Permit and Certificate Number 0 4 3 6 4 6 DEP Plant ID 0 0 7 0 5

(Mailing Address)

United States Printing Ink
343 Murray Hill Parkway
East Rutherford, N.J. 07073

(Plant Location)

(Same)
Bergen County

Applicant's Designation of Equipment St. #2 4 Roller Mills

N.J. Stack No. 0 0 3 No. of Stacks 0 1 No. of Sources 0 0 4

Approval 8 (Mo.) 3 (Day) 79 (Year) Start Up ___ (Mo.) ___ (Day) ___ (Year) Expiration 8 (Mo.) 3 (Day) 84 (Year)

THIS PERMIT AND PERMANENT (5 YEAR) CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 1967 (N.J.S.A. 26:2C-9.2), AND IS BEING ISSUED WITHOUT A FIELD INSPECTION. HOWEVER, FIELD INSPECTIONS ARE SCHEDULED FOR THE FUTURE AND APPROPRIATE ACTIONS WILL BE TAKEN IF SUCH INSPECTIONS DISCLOSE DEVIATIONS FROM YOUR APPLICATION.

YOU MAY BE ENTITLED TO AN EXEMPTION OF TAXATION IF YOUR EQUIPMENT IS TAXED AND IS CONSIDERED TO BE AN AIR POLLUTION ABATEMENT FACILITY. A TAX EXEMPTION APPLICATION MAY BE OBTAINED FROM THIS SECTION.

IF IT IS NECESSARY TO AMEND YOUR EMERGENCY STANDBY PLANS, PLEASE CONSULT WITH THE APPROPRIATE FIELD OFFICE. (SEE OTHER SIDE)

QUESTIONS ABOUT THIS DOCUMENT SHOULD BE DIRECTED TO THE PERMITS AND CERTIFICATES SECTION AT 609 - 292 - 6716 OR THE ADDRESS BELOW.

NOTE: This document must be readily available for inspection at the source location.

Approved by: Gary Pierce Gary Pierce
Supervisor
Permits & Certificates Section

052

N.J. Department of Environmental Protection
Bureau of Air Pollution Control
CN-027

REFERENCE NO. 5

Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

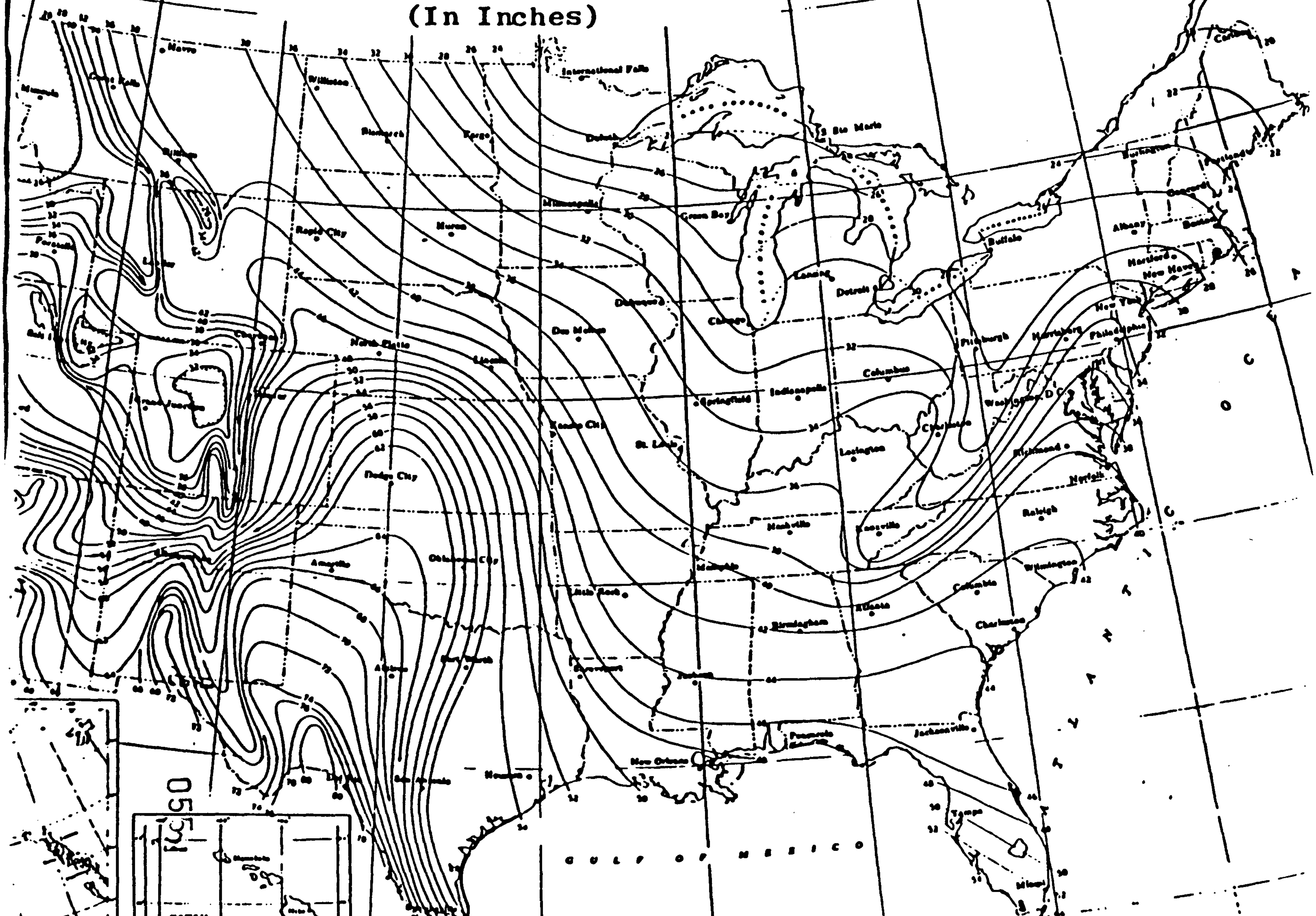
Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

054

MEAN ANNUAL LAKE EVAPORATION
(In Inches)



Based on period 1946-55

NORMAL ANNUAL TOTAL PRECIPITATION (Inc

1 YEAR 24-HOUR RAINFALL (inches)

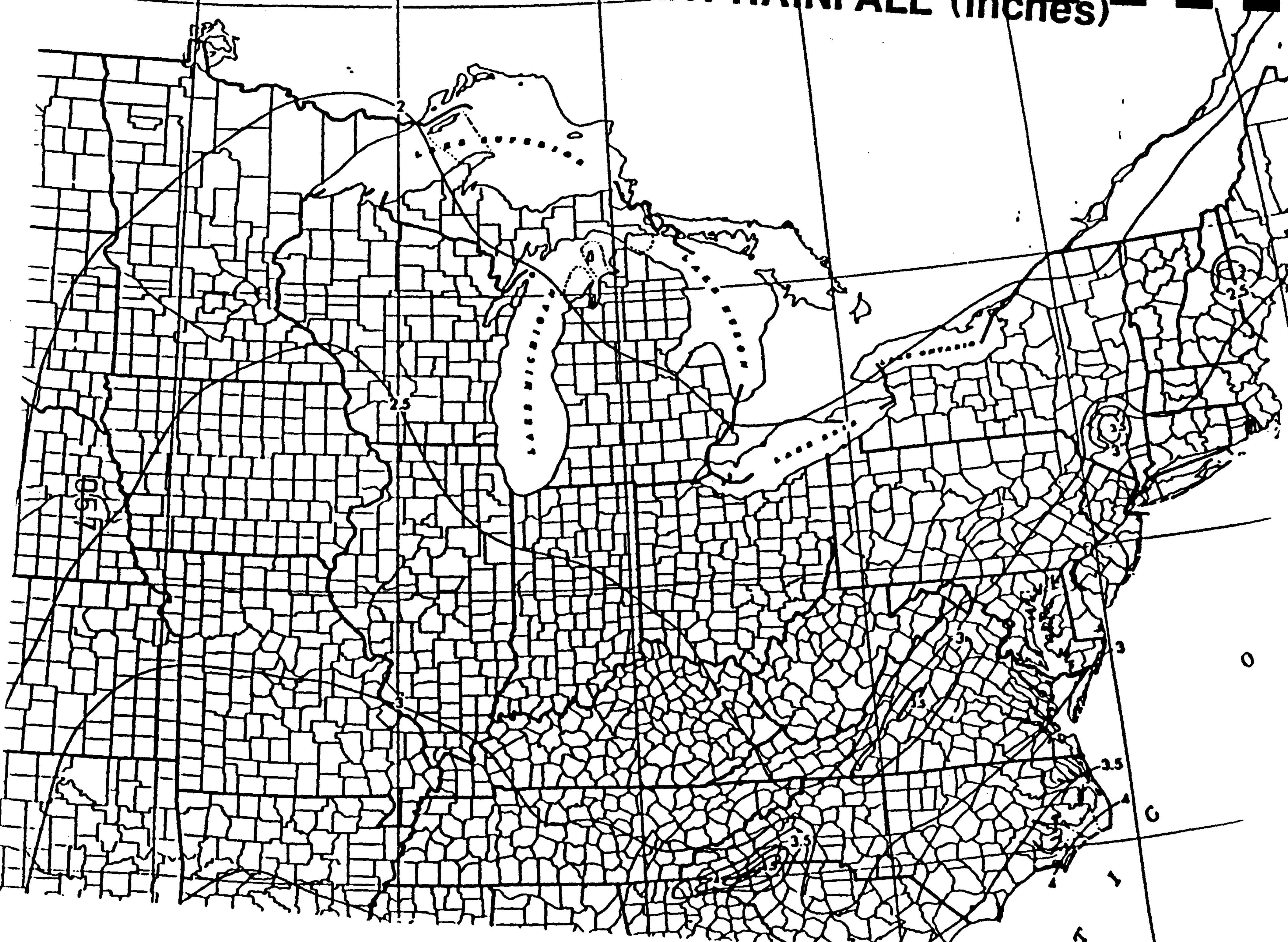


TABLE 2

PERMEABILITY OF GEOLOGIC MATERIALS*

Type of Material	Approximate Range of Hydraulic Conductivity	Assigned Value
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$>10^{-3}$ cm/sec	3

*Derived from:

Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWest ed., Academic Press, New York, 1969

Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

REFERENCE NO. 6

Date: ______

Company

By: ______

Date: ______

Contractor

By: ______

Date: ______

[FR Doc. 84-1432 Filed 1-23-84; 8:45 am]

BILLING CODE 1500-10-M

[OW-FRL-2460-3]

Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, New Jersey; Final Determination

AGENCY: U.S. Environmental Protection Agency.

ACTION: Notice.

SUMMARY: Pursuant to Section 1424(e) of the Safe Drinking Water Act, the Administrator of the U.S. Environmental Protection Agency (EPA), has determined that the Brunswick Shale and Sandstone Aquifer, underlying the Ridgewood Area, is the sole or principal source of drinking water for Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey, and that the aquifer, if contaminated, would create a significant hazard to public health. As a result of this action, Federal financially assisted projects constructed in the Ridgewood Area and its streamflow source zone (upstream portions of Ho Ho Kus Brook and Saddle River Run drainage basins) will be subject to EPA review to ensure that these projects are designed and constructed so that they do not create a significant hazard to public health.

ADDRESSES: The data on which these findings are based are available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Water Supply Branch, 26 Federal Plaza, New York, New York 10278.

FOR FURTHER INFORMATION CONTACT: Damina J. Duda, Water Supply Branch, 26 Federal Plaza, New York, New York 10278 (212) 264-1800.

SUPPLEMENTARY INFORMATION: Notice is hereby given that pursuant to Section 1424(e) of the Safe Drinking Water Act (42 U.S.C., 300f, 300h-3(e), Pub. L. 93-523), the Administrator of the U.S. Environmental Protection Agency (EPA) has determined that the Brunswick Shale and Sandstone aquifer of the Ridgewood Area is the sole or principal source of drinking water for Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey. Pursuant to Section 1424(e), Federal financially assisted projects constructed in the Ridgewood Area and its streamflow source zone (upstream portions of Ho Ho Kus Brook, and

Saddle River Run drainage basins) will be subject to EPA review.

I. Background

Section 1424(e) of the Safe Drinking Water Act state:

(e) If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register. After the publication of any such notice, no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

On July 4, 1979, the Committee to keep Our Water Pure petitioned EPA to designate the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area as sole source aquifer. On January 15, 1980, EPA published a notice in the Federal Register announcing a public comment period and setting a public hearing date. A public hearing was conducted on February 28, 1980, and the public was allowed to submit comments on the petition until March 28, 1980.

II. Basis for Determination

Among the factors to be considered by the Administrator in connection with the designation of an under Section 1424(e) are: (1) Whether the aquifer is the area's sole or principal source of drinking water, and (2) whether contamination of the aquifer would create a significant hazard to public health.

On the basis of information available to this Agency, the Administrator has made the following findings, which are the basis for the determination noted above:

1. The Brunswick Shale and Sandstone Aquifer of the Ridgewood Area is the "sole source" of drinking water for the approximately 68,820 residents of Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey.

2. There is no existing alternative drinking water source or combination of sources which provides fifty percent or more of the drinking water to the designated area.

3. The Brunswick formation is a soft red shale interbedded with coarse grained sandstone. The aquifer is overlain by permeable unconsolidated glacial and recent deposits. As a result of permeable soil characteristics, the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area is highly susceptible to contamination through its recharge zone from a number of sources, including but not limited to, chemical spills, leachate from landfills, stormwater runoff, highway deicers, faulty septic systems, wastewater treatment systems, and waste disposal lagoons. The aquifer is also susceptible to contamination to a lesser degree from the same sources, through its streamflow source zone. Since ground water contamination can be difficult or impossible to reverse and since the aquifer in this area is solely relied upon for drinking water purposes by the population of the Ridgewood Area, contamination of the aquifer could pose a significant hazard to public health.

III. Description of the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area, Its Recharge Zone and Its Streamflow Source Zone

The Brunswick Shale and Sandstone Aquifer is a soft red shale interbedded with coarse grained sandstone. The formation, located in northern New Jersey, is fairly large, extending south into Pennsylvania and north into New York. Igneous intrusions which form the Watchung Mountains and the Palisades, also form the western and eastern boundaries of the Burnswick formation, respecuively. The area in which Federal financially assisted projects will be subject to review is the portion of the Brunswick Shale and Sandstone Aquifer in the Ridgewood Area, its streamflow source zone, and its recharge zone.

For the purposes of this designation, the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area is considered to include the entire municipalities of Ridgewood, Midland Park, Glen Rock, and Wyckoff, New Jersey. It's recharge zone is considered to be one and the same with this area. The streamflow source zone is that portion of the drainage basins of Ho Ho Kus Brook and Saddle River Run located upstream of the Ridgewood area. This includes all or a portion of the following New Jersey municipalities: Waldwick, Allendale, Ramsey, Mahwah, Franklin Lakes, Ho Ho Kus, Saddle River, Upper Saddle River, Woodcliff Lake, Hillside, Washington, Montvale, as well as Ramapo Township, New York.

IV. Information Utilized in Determination

The information utilize in this determination includes the petition, written and verbal comments submitted by the public, and various technical publications. The above data is available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Region II, Water Supply Branch, 26 Federal Plaza, New York, New York 10278.

V. Project Review

EPA Region II is working with the Federal agencies that may in the future provide financial assistance to projects in the area of concern. Interagency procedures have been developed through which EPA will be notified of proposed commitments by Federal agencies for projects which could contaminate the Brunswick Shale and Sandstone Aquifer, upon which the Ridgewood Area is dependent for its sole source water supply. EPA will evaluate such projects and, where necessary, conduct an in-depth review, including soliciting public comments where appropriate. Should the Administrator determine that a project may contaminate the aquifer through its recharge zone so as to create a significant hazard to public health, no commitment for Federal financial assistance may be entered into. However, a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

Although the project review process cannot be delegated, the U.S. Environmental Protection Agency will rely to the maximum extent possible on any existing or future State and local control mechanisms in protecting the ground water quality of the Brunswick Shale and Sandstone Aquifer on which the Ridgewood Area is dependent for its sole source water supply. Included in the review of any Federal financially assisted project will be coordination with the State and local agencies. Their comments will be given full consideration and the Federal review process will attempt to complement and support State and local ground water protection mechanisms.

VI. Summary and Discussion of Public Comments

Most comments were generally in favor of designation. Two local governments submitted resolutions in support of designation. Only two commenters expressed any reservations regarding the designation.

One commenter expressed concern that the proposed designation would provide protection which is duplicative of State and local controls and may lead to unnecessary bureaucratic delays of projects. Although a number of ground water protection measures are available at the Federal, State and local level, none of these, either, individually or collectively, permit EPA to act as directly as would a sole source designation in the review and approval of Federal financially assisted projects. In addition, EPA feels that the sole source project review process will foster integration rather than duplication of environmental review efforts. Memoranda of Understanding have been negotiated with various Federal agencies, with the purpose of streamlining the review process and minimizing project delays.

One commenter expressed concern that the area proposed for sole source designation could be an arbitrary political subdivision of the larger Brunswick aquifer system. The commenter questioned whether sufficient consideration had been given to the physical limits of the hydrologic system. The EPA recognizes that the aquifer does indeed cover a large area. However, a significant portion of the population in these other areas utilize other sources of water supply or have alternative sources available.

Concern was also raised that the Ridgewood Area may have alternative water supply available through adjacent water purveyors: specifically, the Passaic Valley Water Commission or the Hackensack Water Company. EPA has reviewed this matter and determined that either insufficient supply is currently available (in one case) or interconnections between the Ridgewood Area and the purveyor are currently not adequate to handle the Area's demand. Furthermore, the Brunswick Shale and Sandstone Aquifer in the Ridgewood Area is a source of water for export to adjacent purveyors during drought conditions.[4]

The area considered for designation was determined to meet the criteria of an area which depends upon an aquifer for its sole or principal drinking water source and which, if contaminated, would pose a serious threat to the health of the Ridgewood Area residents.

VII. Economic and Regulatory Impact

Pursuant to the provisions of the Regulatory Flexibility Act (RFA), 5 U.S.C. 605(b), I hereby certify that the attached rule will not have a significant impact on a substantial number of small entities. For purposes of this Certification the "small entity" shall have the same meaning as given in Section 601 of the RFA. This action is only applicable to the Ridgewood Area.

The only affected entities will be those Area-based businesses, organizations or governmental jurisdictions that request Federal financial assistance for projects which have the potential for contaminating the aquifer so as to create a significant hazard to public health. EPA does not expect to be reviewing small isolated commitments of financial assistance on an individual basis, unless a cumulative impact on the aquifer is anticipated; accordingly, the number of affected small entities will be minimal.

For those small entities which are subject to review, the impact to today's action will not be significant. Most projects subject to this review will be proceded by a ground water impact assessment required pursuant to other Federal laws, such as the National Environmantal Policy Act, as amended (NEPA), 42 U.S.C. 4321, et seq. Integration of those related review procedures with sole source aquifer review will allow EPA and other Federal agencies to avoid delay or duplication of effort in approving financial assistance, this minimizing any adverse effect on those small entities which are affected. Finally, today's action does not prevent grants of Federal financial assistance which may be available to any affected small entity in order to pay for the redesign of the project to assure protection of the aquifer.

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This regulation is not major because it will not have an annual effect of $100 million or more on the economy, will not cause any major increase in costs or prices, and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States enterprises to compete in domestic or export markets. Today's action only affects the Brunswick Shale and Sandstone Aquifer of the Ridgewood Area. It provides an additional review of ground-water protection measures, incorporating State and local measures whenever possible, for only those projects which request Federal financial assistance.

Dated: January 12, 1983.

William D. Ruckelshaus,
Administrator.

[FR Doc. 84-1887 Filed 1-23-84; 8:45 am]

BILLING CODE 6560-50-M

062

REFERENCE NO. 7

THE LATEST TRIASSIC AND EARLY JURASSIC FORMATIONS OF THE NEWARK BASIN (EASTERN NORTH AMERICA, NEWARK SUPERGROUP): STRATIGRAPHY, STRUCTURE, AND CORRELATION

PAUL E. OLSEN

Bingham Laboratories, Department of Biology
Yale University
New Haven, Connecticut 06520

ABSTRACT. *Newark Supergroup deposits of the Newark Basin (New York, New Jersey, and Pennsylvania) are here divided into nine formations called (from the bottom up): Stockton Formation (maximum 1800 m); Lockatong Formation (maximum 1150 m); Passaic Formation (maximum 6000 m); Orange Mountain Basalt (maximum 200 m); Feltville Formation (maximum 600 m); Preakness Basalt (maximum +300 m); Towaco Formation (maximum 340 m); Hook Mountain Basalt (maximum 110 m); and Boonton Formation (maximum +500 m). The latter seven formations are new and result from subdividing the Brunswick Formation and Watchung Basalt of Kümmel and Darton. Each formation is characterized by its own suite of lithologies, the differences being especially obvious in the number, thickness, and nature of their gray and black sedimentary cycles (or lack thereof).*

Newark Basin structure still escapes comprehensive understanding, although it is clear that faults (predominantly normal) and onlaps bound both the eastern and western edges of the basin. The cumulative thickness of formations and the apparent movement of the faults is greater on the western than the eastern side, however.

Fossils are abundant in the sedimentary formations of the Newark Basin and provide a means of correlating the sequence with other early Mesozoic areas. The Stockton, Lockatong, and most of the Passaic Formation are Late Triassic (?Middle and Late Carnian — Rhaetic) while the uppermost Passaic Formation (at least locally) and younger beds appear to be Early Jurassic (Hettangian and Sinemurian) in age. The distribution of kinds of fossils is intimately related to sequences of lithologies in sedimentary cycles.

Manuscript received 2 Jan 1980.
Manuscript accepted 14 Jan 1980
Revised manuscript received 16 Sep 1980.

INTRODUCTION

Despite well over a century of interest in the early Mesozoic Newark Supergroup of eastern North America, many fundamental aspects of its historical and structural geology remain unexplored. In part, this is due to the complexity of stratigraphic and structural relations in the individual basins, coupled with the rarity of continuous exposures. As a result, much of our accepted understanding of the Newark Supergroup has been based on incomplete observations and opinion. The purpose of this paper is to provide a more thorough observational foundation against which past hypotheses may be assessed and on which future work may be based. Emphasis is placed on the younger beds of the Newark Basin, for they have never been examined in detail, and a new stratigraphic framework is proposed. These younger Newark Basin beds provide us with a key to understanding the entire basin column, which in turn is crucial to the context in which early Mesozoic organic evolution, continental sedimentation, and tectonic development are to be studied.

REGIONAL SETTING

Triassic and Jurassic Newark Supergroup rocks (Figure 1) (Olsen, 1978; Van Houten, 1977) occupy numerous elongate basins in eastern North America and consist of predominantly detrital fill locally more than 10,000 m thick. In most

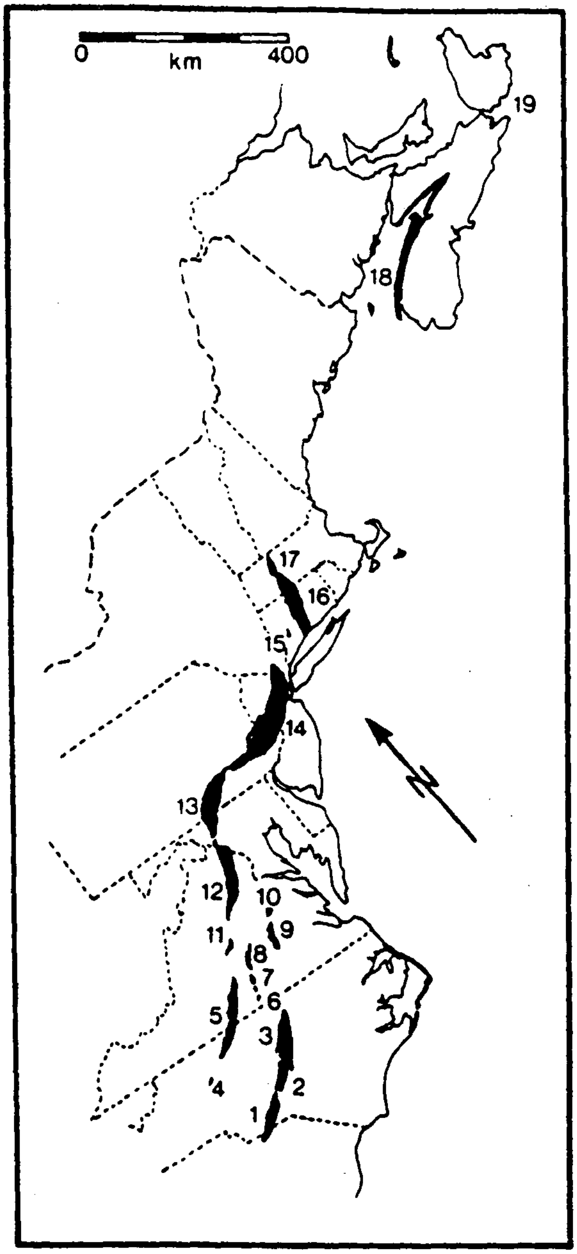


FIG. 1. Newark Supergroup deposits exposed in eastern North America: 1. Wadesboro Basin of Chatham Group; 2. Sanford Basin of Chatham Group; 3. Durham Basin of Chatham Group; 4. Davie County Basin; 5. Dan River — Danville Basins of Dan River Group; 6. Scottsburg Basin; 7. Basins south of the Farmville Basin; 8. Farmville Basin. 9. Richmond Basin; 10. Taylorsville Basin; 11. Scotsville Basin; 12. Culpeper Basin (Culpeper Group; 13. Gettysburg Basin; 14. Newark Basin; 15. Pomperaug Basin; 16. Hartford Basin; 17. Deerfield Basin; 18. Fundy Basin (Fundy Group); 19. Chedabucto Basin (= Orpheus Graben?). Data primarily from Calver, 1963. King, *et al.*, 1944; Van Houten, 1977; and Olsen, 1978.

areas, red clastics are the dominant sedimentary rocks and tholeiitic, intrusive and extrusive diabases and basalts are the most common volcanics. These unconformably overlie (or rarely intrude) Precambrian and Palaeozoic rocks and are overlain by post-Jurassic rocks of the Coastal Plain, or alluvium and soils.

The Newark Basin is the most northerly of three Newark Supergroup basins lying in an arcuate belt stretching from southern New York to central Virginia (Figure 2). The region has attracted the attention of researchers since the beginnings of North American geological work (Kalm, 1753-1761; Schopf, 1783-1784); by about 1890 the deposit had been mapped out (Lyman, 1895; Cook, 1868) and by 1900 the currently used rock-stratigraphic framework was established (Table 1). Kümmel (1897) divided the Newark Basin sequence into three formations: the Stockton, Lockatong, and Brunswick. As recognized by Kümmel, the Stockton Formation (maximum thickness 1800 m) is the basal deposit consisting of thick beds of buff or cream colored conglomerate and sandstone, and red siltstone and sandstone. Throughout the exposed central portion of the Newark Basin, Kümmel recognized the Lockatong Formation (maximum thickness 1150 m) which is made up of gray and black siltstone arranged, as later shown by Van Houten (1969), in distinctive sedimentary cycles (Figure 4). The youngest formation Kümmel called the Brunswick. Throughout the Newark Basin, the lower Brunswick consists of sandstone and conglomerate and clusters of laterally persistent cycles of gray and black siltstone similar to the Lockatong Formation (Kümmel, 1897, 1898; McLaughlin, 1943; Van Houten, 1969). The upper Brunswick, on the other hand, is made up of three major extrusive basalt sheets which Darton (1890) called the Watchung Basalt, two major interbedded sedimentary units, and a thick overlying sedimentary unit. The latter sedimentary sequences have escaped even preliminary lithologic description.

Field work by this author during the past few years has shown that Kümmel's Brunswick For-

FIG. 2. The Newark Basin. A. geologic map showing distribution of formations, conglomerate facies (irregular stipple), and major clusters of detrital cycles in Passaic Formation (black lines). Abbreviations of formations and intrusive bodies as follows: B. Boonton Formation; C. Coffman Hill Diabase; Cd. Cushetunk Mountain Diabase; F. Feltville Formation; H. Hook Mountain Basalt; Hd. Haycock Mountain Diabase; Jb. Jacksonwald Basalt. L. Lockatong Formation; O. Orange Mountain Basalt; P. Passaic Formation; Pb. Preakness Basalt; Pd. Palisade Diabase; Pk. Perkasie Member of Passaic Formation; Rd. Rocky Hill Diabase; S. Stockton Formation; Sd. Sourland Mountain Diabase; T. Towaco Formation.

B. Structural diagram of Newark Basin (note — parts of basin margin not mapped as faults should be regarded as onlaps, faults with teeth on downthrown side): a, Jacksonwald Syncline; b. Chalfont Fault; c. Hopewell Fault; d. Flemington Fault; e. Sand Brook Syncline; f. Flemington Syncline; g. Cushetunk Mountain Anticline; h. New Germantown Syncline; i. Somerville Anticline; j. New Vernon Anticline; K. Ladentown Syncline; l. Watchung Syncline; m. Ramapo Fault.

C. Geographic map of Newark Basin showing locations of type sections of formations proposed in this paper: a. type section of Passaic Formation; b. type section of Orange Mountain Basalt; c. type section of Feltville Formation; d. type section of Preakness Basalt; e. type section of Towaco Formation in Roseland, New Jersey; f. type section of Hook Mountain Basalt in Pine Brook, New Jersey; g. type section of Boonton Formation in Boonton, New Jersey; h. Lincoln Tunnel, Weehawken, New Jersey.

Data for A, B, and C from original observation and Kümmel, 1897, 1898; Lewis and Kümmel, 1910-1912; Darton, 1890, 1902; Darton *et al.*, 1908; Glaeser, 1963; Sanders, 1962; Van Houten, 1969; McLaughlin, 1941, 1943, 1944, 1945, 1946a, 1946b; Bascom *et al.*, 1909a, 1909b; Bailey *et al.*, 1914; Willard *et al.*, 1959; Manspiezer; pers. comm.

mation consists of a heterogenous mix of major units of differing and distinctive lithology, each as distinct and perhaps originally as widespread as the Stockton or Lockatong; further, each "Watchung Basalt" and the interbedded and overlying sedimentary beds are lithologically distinct from the lower Brunswick. In addition, Cornet, McDonald, and Traverse (1973), Cornet and Traverse (1975), Cornet (1977), and Olsen and Galton (1977) have shown that much of the upper Brunswick is Early Jurassic rather than Late Triassic as had been assumed. It now seems clear that these Jurassic rocks are in many ways different from the Late Triassic lower Brunswick, Lockatong, or Stockton formations. For these reasons, I propose the terms Brunswick Formation (Kümmel, 1897) and Watchung Basalt (Darton, 1890) be dropped and their components subdivided to form seven new formations (Table 1) in parallel with Lehmann's (1959) widely used divisions of the Hartford Basin and Klein's (1962) divisions of the Fundy Group in accord with the American Code of Stratigraphic Nomenclature and the International Stratigraphic

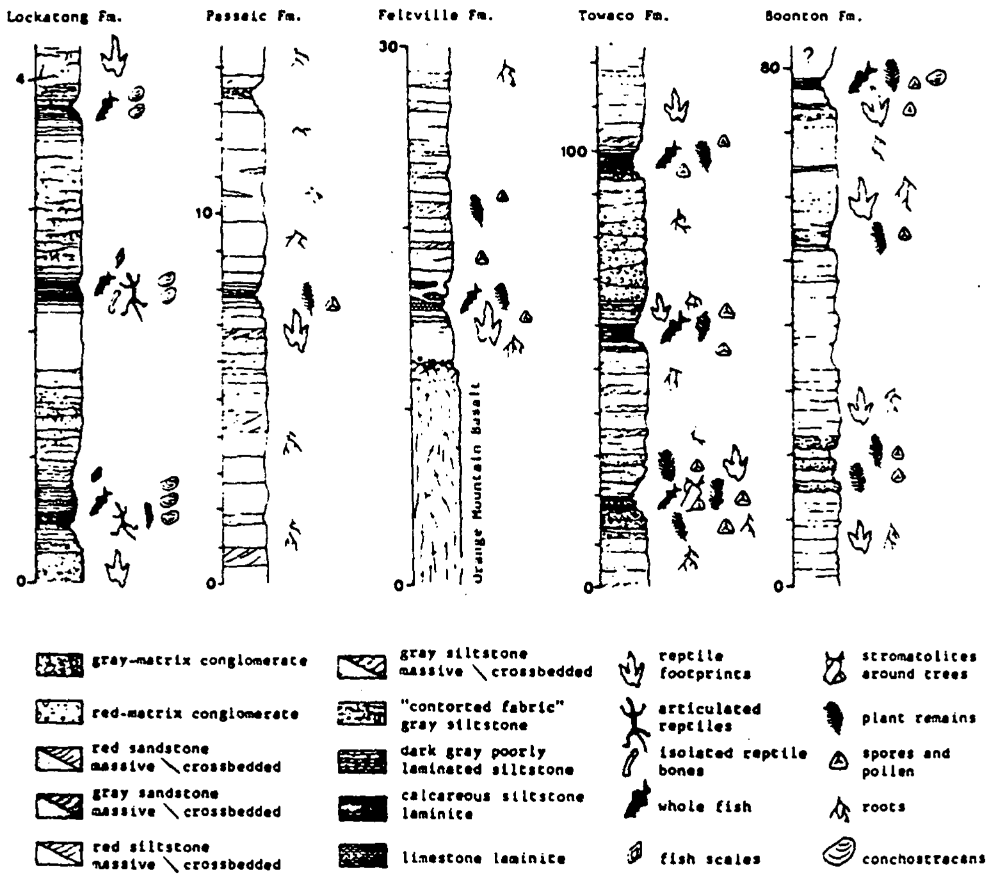


FIG. 3. Major types of sedimentary cycles of the formations of the Newark Basin. Note that the approximate center of the symbols for the major types of fossils is placed about where they occur in the section to the left. Note the change in scale (in meters) from section to section.

Lockatong Formation section measured at Kings Bluff, Weehawken, New Jersey, and represents three detrital cycles. The Passaic Formation section measured along Nishisakawick Creek and Little Nishisakawick Creek, northeast of Frenchtown, New Jersey; the two cycles shown represent the lower portion of McLaughlin's Graters Member (i.e., Member G) and are characteristic of most of the detrital cycles of the Passaic Formation. The upper cycle develops a dark gray siltstone a kilometer to the south. Feltville Formation section measured along East Branch of Middle Brook, Martinsville, New Jersey — there is only one such "cycle" in the Feltville Formation. Towaco Formation section measured along stream 2 km southwest of Oakland, New Jersey; three cycles are shown. Boonton Formation section is upper part of type section (see Figure 12); section not clearly cyclic.

r compo-
rmations
(1959)
Basin and
Group in
tigraphic
ratigraphic

Guide. In this way, nominal status is given to beds critical to the overall pattern of Newark Basin historical geology.

DESCRIPTIVE STRATIGRAPHY OF THE POST-LOCKATONG FORMATIONS

The Passaic Formation

The name Passaic Formation is proposed for the predominantly red siltstone, sandstone, and conglomerate which conformably overlie the Lockatong Formation and which underlie the Orange Mountain and Jacksonwald basalts. It is equivalent to the pre-basalt part of Kümmel's Brunswick Formation (Table 1). The type section (Figure 4) consists of intermittent exposures

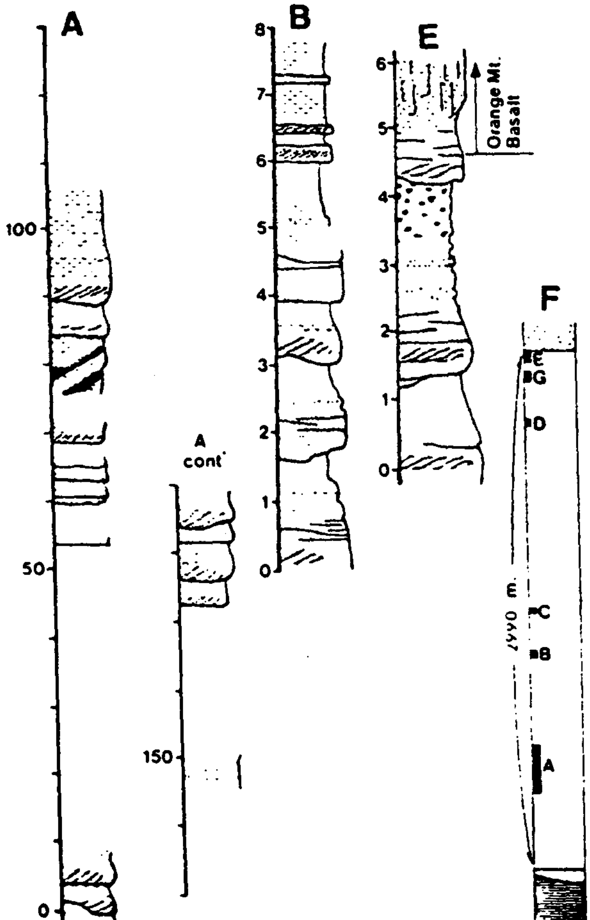


FIG. 4. A - E. type section of Passaic Formation (see Appendix for description); F. diagram showing positions of sections A - E in Passaic Formation.

of red siltstone and sandstone along interstate Route 80 near Passaic, New Jersey (Figure 2 and Appendix).

As is the case for all Newark formations, the estimation of stratigraphic thicknesses in the Passaic Formation is hampered by the presence of a series of faults with variable amounts of dip-slip displacement cutting much of the Newark Basin. The exact distribution of these faults is poorly known and thus many trigonometrically computed thicknesses in the Passaic Formation are probably overestimations. This is especially true in the northern and southern portions of the Newark Basin. The field relationship of mapped gray siltstones in the central Newark Basin, however, shows that in broad areas these smaller faults are missing and the calculated stratigraphic thickness is probably correct (McLaughlin, 1943). Instead of a large number of small faults, the central Newark Basin is cut by several very large faults (Figure 2).

In spite of these mensuration problems, it is clear that the Passaic Formation is the thickest, coherent lithologic unit in the Newark Basin, reaching a maximum calculated stratigraphic thickness of over 6,000 m (Jacksonwald Syncline). The formation outcrops throughout the Newark Basin although its upper beds are preserved only in the Watchung Syncline (Figure 2), in the smaller synclines preserved along the eastern side of the Flemington Fault, and in the Jacksonwald Syncline. In all other areas, the upper Passaic Formation has been removed by post-Newark erosion.

While in most areas the Passaic Formation rests conformably on Lockatong Formation, in several areas on the western margin of the Newark Basin, the Passaic directly onlaps the step-faulted basement without any intervening Stockton or Lockatong. In these areas (see Figure 5), the thickness of upper Passaic Formation present below the Orange Mountain Basalt is comparatively slight. One area where these relationships can be clearly seen is near Cushetunk Mountain (Figure 5) in central New Jersey. In the New Germantown Syncline, the stratigraphic distance from the Palaeozoic basement to the Orange Mountain Basalt is about 800 m. Less than 30 km to the southwest, over 1,000 m of Passaic is

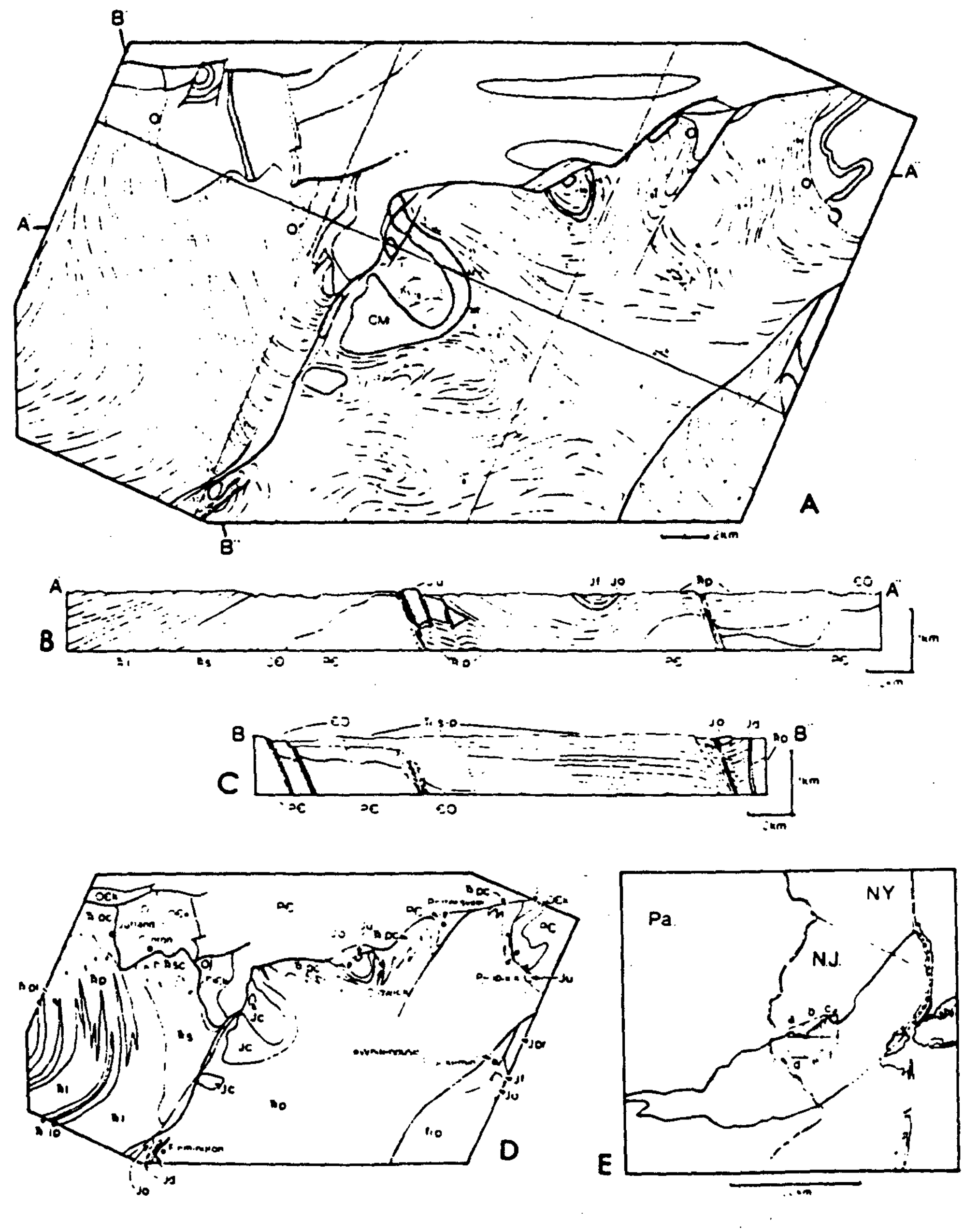


FIG. 5. Cushetunk Mountain area: A. map showing strike lines, degree of dip, major faults and onlaps (o) — diabase and basalt represented by dark gray shading while light gray shading represents Palaeozoic and PreCambrian basement rocks — CM is Cushetunk Mountain; B. cross section of area in A (above) along line A'-A" — note vertical exaggeration; C. section of area in A (above) along B'-B"; D. geologic map of Cushetunk Mountain area (Oek, Cambrian and Ordovician sedimentary rocks of the Kittatinny carbonate terrane) O, allochthonous peltic and minor carbonate rocks; eO, combined Oek and O; Pe, Precambrian crystalline rocks; T lp, tongues of Triassic Passaic Formation lithology within main mass of Lockatong Formation; T pc, Triassic Passaic Formation, conglomeratic facies; T p, Triassic Passaic Formation; T pl, Triassic Passaic Formation, Lockatong-like clusters of detrital sedimentary cycles; T s, Triassic Stockton Formation; T sc, Triassic Stockton Formation, a conglomeratic facies identical to T pc; JF, Jurassic Feltville Formation; Jc, Jurassic Cushetunk Mountain

present above 2.000 m of Stockton plus Lockatong, and in the latter area the top of the Passaic Formation is not preserved. In less well exposed areas, or where the strike parallels the basin margin, such onlap and step-faulted relationships cannot be observed without geophysical techniques or analysis of well records (McLaughlin, 1943, 1944; Dunleavy, 1975).

Facies patterns of the Passaic Formation are a modified continuation of those of the Lockatong, and different from all younger Newark Basin deposits. Laterally persistent and periodically spaced clusters of gray and black siltstone cycles characterize both formations, the Lockatong being composed almost entirely of such repetitive units (see Figure 3). According to Van Houten (1962, 1964, 1965, 1969), the great majority of the Lockatong cycles fall into two broad classes which he terms chemical and detrital (Figure 3). The most laterally continuous are detrital and these generally occur in bundles. Each bundle is separated from the next (in vertical succession) by a series of chemical cycles; the distance from the center of one detrital cycle bundle to the next being about 110-125 m in the central Newark Basin (Van Houten, 1969). This figure decreases to the basin margins. Chemical cycles are characterized by the presence of abundant analcime and are for the most part restricted to the center of the basin, giving way in all directions to red clastics. The lateral edges of the Lockatong thus consist of bundles of detrital cycles separated by red siltstone and sandstone. It follows that the boundary between the Passaic Formation and the Lockatong can be operationally defined (both horizontally and vertically) as where the thicknesses of beds of red clastics dominate gray and black. It further follows that where gray and black detrital cycle clusters do not occur, as in Rockland County, New York, the Passaic Formation rests directly on the Stockton.

Bundles of detrital cycles occur through most of the thickness of the Passaic Formation, periodically spaced, as in the Lockatong. The great majority of these cyclic non-red units, however, are not as laterally continuous as those of at least the lower Lockatong, and generally the number of cycles involved in these clusters decrease in frequency through the Passaic Formation. For the lower and middle Passaic, McLaughlin (1933, 1943, 1945, 1946, 1948) has succeeded in mapping out the distribution of these non-red units over most of the central Newark Basin. A detailed stratigraphic framework has developed around these beds, each detrital cycle bundle being designated by a letter (A, B, C. . . . .). The extension of McLaughlin's units outside of the areas he mapped is a principle aim of ongoing research (Figure 2).

The highest of McLaughlin's mapped units (134 m above members L and M) join with other cycles to the southwest to form a large body of gray and black siltstone called the Perkasie Member (McLaughlin, 1946). Unlike the Lockatong Formation, however, the thickest section of the Perkasie Member is in the southwestern portion of the Newark Basin rather than near its geographic center. Due to repetition by major faults (Figure 2) and changes in strike along folds, the broader aspects of the three-dimensional relationships of most Passaic dark clastic units can be observed. Looking over the bulk of the Passaic Formation (Figure 2), there is no evidence that the rest of the detrital cycle clusters of the Passaic (i.e., other than lateral equivalents of the Lockatong Formation or Perkasie Member) represent the remnants of a large, now eroded, gray and black siltstone body as Glaeser (1963) has suggested.

There are major masses of red-matrix conglomerate at both the northern and southern ends of the Newark Basin (Figure 2). These grade nearly imperceptively into the red clastics of the Passaic Formation and are here considered facies of it. Other much smaller areas of conglomerate occur along the western border of the Newark Basin; these are especially prevalent where Passaic

---

Diabase: Jd, Jurassic diabase dikes; Jo, Jurassic Orange Mountain Basalt; Jpr, Jurassic Preakness Mountain Basalt; Ju, Jurassic basalt, undefined; E, geographic position and quadrangle maps of Cushetunk Mountain area (a, High Bridge Quadrangle; b, Califon Quadrangle; c, Gladstone Quadrangle; d, Pittstown Quadrangle; e, Flemington Quadrangle; f, Raritan Quadrangle).

Formation onlaps basement rocks (Figures 2 and 5).

A point of general applicability to perhaps most Newark Supergroup deposits and particularly relevant to Passaic Formation conglomerates is the lack of objective lithologic distinction between basal and border conglomerates. The small bodies of conglomerate present along the western border of the Newark Basin (so called fanglomerates) have traditionally been interpreted as genetically related to the presence of border faults and the presence of such conglomerates was often used as evidence for the faults themselves (Russell, 1922; Barrell, 1915; Sanders, 1963; Van Houten, 1969). It appears from relations presented in Figure 5 and geophysical evidence (Dunleavy, 1975) that many of these "border conglomerates" are in fact basal (see Sanders, 1974 and Faill, 1973). Conglomerates present in the basal Stockton Formation in the same area (west of Cushetunk Mountain, Figure 5) are lithologically indistinguishable from these Passaic conglomerates. The relationship of these conglomerates to the inferred syndepositional topography of the basin is not at all obvious and, thus, for the present, interpretive designations such as fanglomerate, basal conglomerate, and border conglomerate should probably be avoided.

Massive diabase intrusions are implaced through the upper Passaic Formation in the west central portions of the Newark Basin and in the lower Passaic Formation in the northern Newark Basin. These intrusions generally parallel the distribution of major bodies of gray and black siltstone: thus, the largest intrusions are broadly concordant (but locally discordant) with the Lockatong Formation (i.e., Palisades, Rocky Hill, and Sourland Mountain Sills) or the Perkasie Member of the Passaic (Haycock Mountain, Coffman Hill, and possibly Cushetunk Mountain diabases; see Figure 5). The general pattern seems to be for these intrusions to be implaced progressively higher in the Newark Basin section from east to west.

The Passaic Formation, like most Newark Supergroup deposits, is cut by a series of narrow, often nearly straight and vertical diabase dikes trending north and northeast. The mapping of

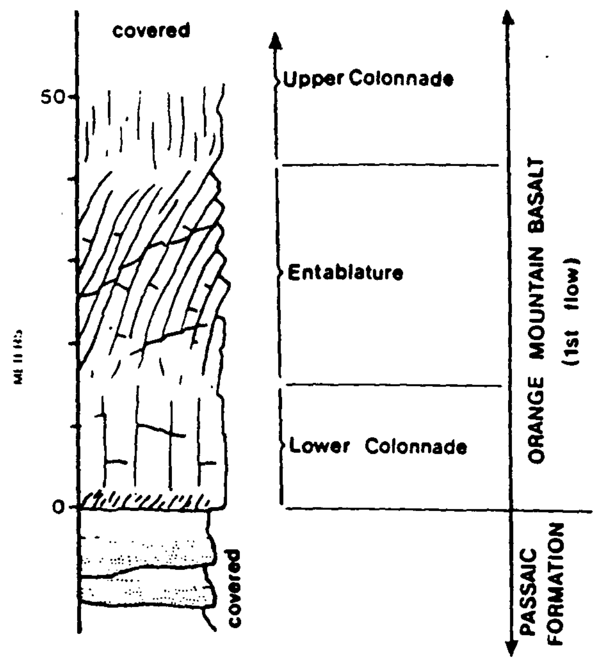


FIG. 6. Type section of the Orange Mountain Basalt; exposure along Interstate Route 280 in East Orange, New Jersey. In Passaic Formation, stipple represents red sandstone and plain area represents red sandstone.

the distribution of these intrusives is still very incomplete.

Orange Mountain Basalt

Orange Mountain is the local name of the First Watchung Mountain in Essex County, New Jersey, long known for its spectacular exposures of columnar basalt (Cook, 1884); the name Orange Mountain is, therefore, suggested for these multiple (at least two), tholeiitic, basalt flows and interbedded volcanoclastic units above the Passaic Formation and below the Feltville Formation. The type section, exposing about 40% (50 m) of the formation's total thickness, is along Interstate Route 280 at its cut through Orange Mountain in East Orange, New Jersey (Figure 7). According to Puffer and Lechler (1980) the Orange Mountain Basalt belongs to the high-TiO_2 type of basalt of Weigand and Ragland (1970) and is chemically very similar to the Palisade Diabase.

The Orange Mountain Basalt is the oldest Newark Basin Formation thought to be wholly

Early Jurassic in age, and like other Jurassic beds in the Newark Basin, the main area in which the basalt is preserved is the Watchung Syncline (Figure 2). Smaller synclines preserve portions of the Orange Mountain in several other regions of the Newark Basin (Figure 2). In the New Germantown and Sand Brook synclines, the overlying Feltville Formation is preserved above the basalt; correlation by palynomorph assemblages and fossil fish (Cornet, 1977; Olsen, McCune, and Thomson, in press) demonstrate the identity of the Feltville Formation and by implication the underlying basalt. Between these two synclines is a newly identified very small outlier of basalt, preserved in what can be called the Flemington Syncline (Figure 5). Unfortunately, the remnant is so small that no sedimentary rocks are preserved above it. The simplest hypothesis identifies this remnant as an additional portion of the Orange Mountain Basalt. What has been termed the Jacksonwald Basalt (Wherry, 1910) outcrops in a syncline near the southern terminus of the Newark Basin (Figure 2) over 100 km southwest of the Watchung Syncline. Palynomorph assemblages recovered from the overlying sediments indicate correlation with the Feltville Formation (Cornet, 1977). There is no evidence to contradict the hypothesis that this outlier, too, represents the Orange Mountain Basalt. A possible remnant of Orange Mountain Basalt is present in the Ladentown Syncline in Rockland County, New York (Figure 2). Between this and the northern end of the Watchung Syncline is the Union Hill exposure of basalt. N. M. Ratcliff (pers. Comm.) has recently found exposures which show this unit to be extrusive, and, as such, it is most likely Orange Mountain Basalt. According to Geiger, Puffer, and Lechler (1980) and Geiger (personal communication), the Oldwick, Sand Brook, and Jacksonwald outliers are chemically identical to the Orange Mountain Basalt; while the Ladentown Outlier is chemically most similar to the Preakness Basalt (Second Watchung of Darton, 1890). Taken together, these remnants of Orange Mountain Basalt suggest that originally the basalt covered the almost entire Newark Basin, a minimum of over 7,000 km^2. This is comparable to the extent of the Holyoke Basalt over the Hartford Basin and the North Mountain Basalt over the Fundy Basin.

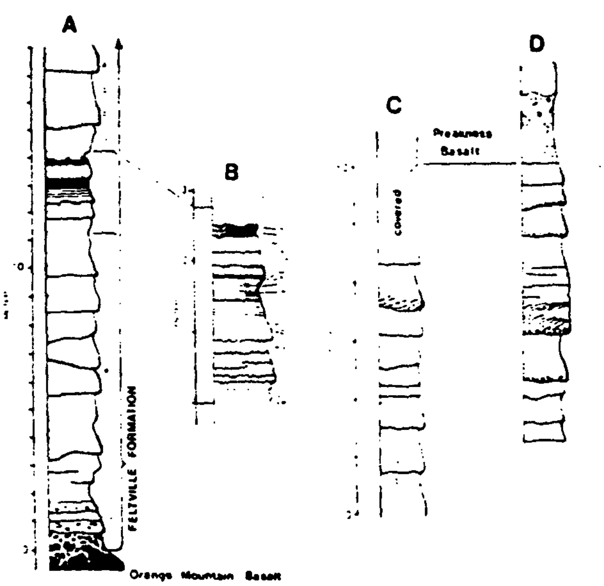


FIG. 7. Type section of the Feltville Formation and sections of the upper Feltville Formation.

A vand B, type section of the Feltville Formation; section exposed along ravine for Blue Brook about 1 km south of Lake Surprise in the Watchung Reservation. For key to individual units, see Appendix.

C and D, sections in the upper Feltville Formation. Dark stipple represents buff sandstone and feldspathic sandstone while the light stipple represents red sandstone and coarse siltstone. The light areas represent red siltstone and the black oblong dots, carbonate concretions. Section C is exposed along a tributary of East Branch, near Dock Watch Hollow, north of Martinsville, New Jersey. Section B is exposed in a cut in back of the Pleasant Valley Nursing Home in West Orange, New Jersey. C and D are 20 km from one another.

The Orange Mountain Basalt appears thickest in the Watchung Syncline, varying between 100 and 200 m. At least 130 and 120 m are present in the New Germantown and Sand Brook synclines, respectively, and greater than 100 m are present in the Jacksonwald Syncline. Existing exposures do not permit estimate of the thickness of the Flemington, or Union Hill.

Individual flows of the Orange Mountain Basalt (like other Newark Basin extrusives) are identified by recognition of the following criteria: glassy, dense, or discolored contacts at a flow boundary; thin volcanoclastic beds between flows; or a sequence of massive, columnar, and vesicular basalt identifying a single cooling unit as in a

Tomkeiff (1940) structural sequence. Using these criteria, a minimum of two flows are evident in most sections of the Orange Mountain Basalt in at least the Watchung and New Germantown synclines (Faust, 1975 and pers. obs.). The lower flow is exposed in the type section and consists of nearly a complete Tomkeiff sequence (Manspeizer, 1969). Other exposures of this flow are abundant. In most places the lower and upper flows are separated by a red volcanoclastic bed which is generally less than a meter thick (Bucher and Kerr, 1948; Johnson, 1957; Van Houten, 1969; Faust, 1975). In the New Germantown Syncline, however, the volcanoclastic bed is over 4 m thick and has numerous beds of red, purple, and gray, ripple-bedded and mudcracked siltstone. The upper flow is extensively pillowed and pahoehoe-like near the type section (Fenner, 1908; Van Houten, 1969) and locally at isolated spots throughout the Watchung Syncline. Elsewhere, however, the upper flow resembles the lower in having a large columnar entablature. Whether or not the two flows exposed at these outcrops represent single continuous sheets or smaller discontinuous units is as yet not known.

Feltville Formation

The sedimentary rocks above the Orange Mountain Basalt and below the Preakness Basalt are here termed the Feltville Formation. The Feltville consists of red siltstone and sandstone, buff, gray, and white feldspathic sandstone, and a thick, laterally continuous non-red unit containing a unique, frequently laminated limestone. This formation is named for the type exposure (Figures, 2, 7), in the old village of Feltville in the Watchung Reservation (Union County Park Commission), where about 15% of the total thickness of the Feltville Formation is exposed.

Like the underlying Orange Mountain Basalt, the Feltville Formation is preserved in the Watchung, New Germantown, Sand Brook, and possibly the Jacksonwald synclines (Figure 2). It averages about 170 m thick in the Watchung Syncline, apparently thickening to the southwest; at least 300 m are present in the Sand Brook Syncline, 600 m in the New Germantown Syncline, and at least 200 m in the Jacksonwald Syncline.

The Feltville Formation is distinguished from the underlying Passaic Formation and younger Jurassic formations of the Newark Basin by the presence of abundant beds of buff, gray, or white feldspathic sandstone interbedded with red siltstone in fining-upwards sequences (Figure 7); thus, much of the Feltville resembles the Stockton Formation. The lower half of this formation contains a black to white laminated limestone, calcarenite, and graded siltstone bed (0.4 - 3 m) containing abundant fossil fish. This lies between two beds (each 1 - 7 m) of gray, small to large-scale crossbedded siltstone and sandstone. As is true for the formation as a whole, these three beds are thickest in the New Germantown Syncline (> 14 m). The available evidence suggests that the Feltville Formation, like the Orange Mountain Basalt, originally occupied the whole area of the Newark Basin, and judging from the exposures in the Watchung Syncline and the other synclines in which the formation is exposed, the predeformational shape of the Feltville Formation was a wedge thickest along the western border of the basin.

Preakness Basalt

The name Preakness Basalt is proposed for the extrusive, tholeiitic basalt flows and interbedded volcanoclastic beds above the Feltville Formation and below the Towaco Formation. Preakness Mountain is the local name of the Second Watchung Mountain, a ridge of this basalt near Franklin Lakes, New Jersey. The type section includes about 30% of the formation and is located along Interstate Route 280 (Figure 8) about 2.25 km west of the Orange Mountain Basalt type section. This Preakness Basalt resembles the high-Fe_2O_3 basalt of Weigand and Ragland (1970) and resembles Walker's (1969) "second pulse" portion of the Palisades Diabase in trace element composition (Puffer and Lechler, 1980).

The Preakness Basalt is the thickest extrusive unit in the Newark Basin. The calculated thickness is 215 m at its northernmost outcrops at Pompton, New Jersey (Figure 9). Judging from outcrop width the formation thickens to the south to as much as 500 m near the type section. The

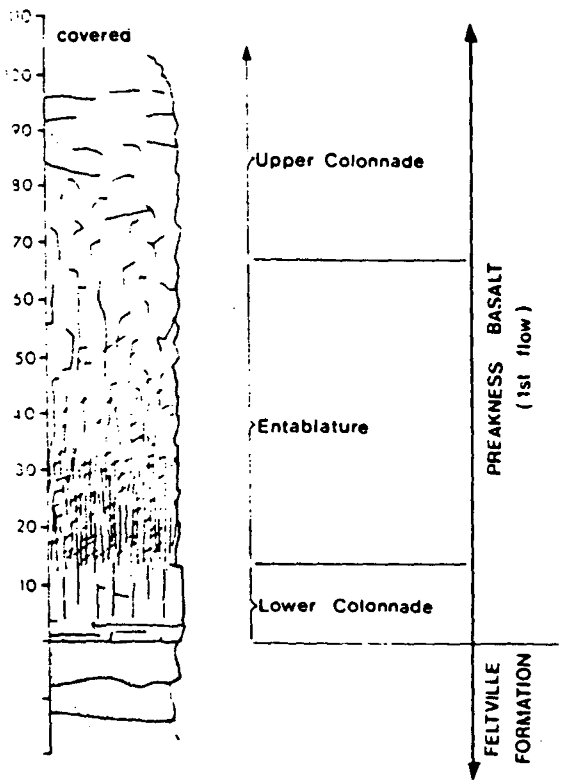


Fig. 8. Type section of the Preakness Basalt. Section located along Interstate Route 280, 2.25 km west of type section of the Orange Mountain Basalt. Symbols for Feltville Formation, as for Passaic Formation (Figure 6).

maximum figure is questionable since in the latter area the strike of the formation nearly parallels the trend of small faults cutting this region. That a figure of more than 300 m may be near the truth is suggested by the persistence of a large outcrop width around the southern curve of the Watchung Syncline. In contrast to the underlying units, the Preakness Basalt is not definitely preserved outside the Watchung Syncline. There are small masses of basalt at the northwestern edge of the New Germantown and Sand Brook synclines but the exposures are not good enough to tell whether these are beds lying stratigraphically above the Feltville or merely an upthrown fault slice of the Orange Mountain Basalt. However, on the basis of trace element geochemistry Geiger, Puffer, and Lechler (1980) have concluded that these small masses are Preakness Basalt. Likewise, according to the latter authors, the Ladentown flows are also Preakness Basalt.

At its base, the Preakness Basalt is much more variable than the Orange Mountain Basalt. Locally, there are thick (20 m, see Figure 9) sequences of multiple flows of highly vesicular basalt flows, possibly making up basalt forset beds (Manspiezer, pers. comm.) with intercalcated volcanoclastic beds; in other areas there are thick beds of angular, vesicular basalt breccia (aa). The latter tends to be very weathered and porous at the surface. In still other areas, the thick main basalt flow lies directly on unaltered (megasopically) sediments of the Feltville Formation.

At least two or perhaps three thick individual flows make up the bulk of the Preakness Basalt. The lowest flow is the thickest (about 100 m) and is exposed throughout the Watchung Syncline, usually showing a complete (although modified) Tomkeiff structural sequence. In most outcrops, the entabulature is coarse-grained and densely jointed, forming high, irregularly angular columns 0.1 m to 1.0 m in width, in marked contrast to those of the Orange Mountain Basalt. The first flow is separated from the second by a thin red siltstone, the distribution of which was mapped by Kümmel (1897) and Lewis (1907b)

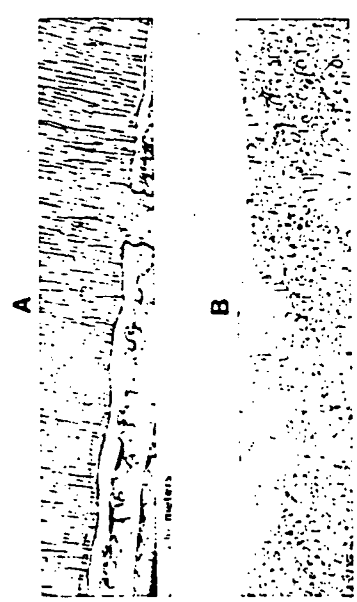


Fig. 9. Thin flow units at the base of the Preakness Basalt: A, thin pahoehoe flows and possible feeder dike along Interstate Route 78 in Pluckemin, New Jersey; B, possible aa flows exposed along the Passaic River at Little Falls, New Jersey (adapted from Darton, 1890).

in the southern portion of the Watchung Syncline (but see Faust, 1975). The extent of the second flow out of this area is not well known. Lewis (1908) states that all the basalt above the first flow belongs to a single flow 244 m thick, but in the northern part of the Watchung Syncline there is at least one other flow (Faust, 1975). This is separated from what I presume to be the second flow by a red and buff siltstone. This third flow is at least 60 m thick. Darton (1890) presented evidence of at least three flows in the Preakness Basalt at Pompton (Figure 10) where the formation is 215 m thick. Kümmel (1898) favors the hypothesis that the Pompton exposures represent a single flow repeated twice by faulting; that Darton's interpretation is more likely is shown by the extension of the upper two flows across Pine Lakes in Pompton in a direction exactly parallel to the strike of the overlying Towaco Formation but at an angle to the trend of the local faults (Figure 14). Finally, three flows appear present in the Ladentown outlier. More field work is needed to clarify the number and distribution of flows within the Preakness Mountain Basalt.

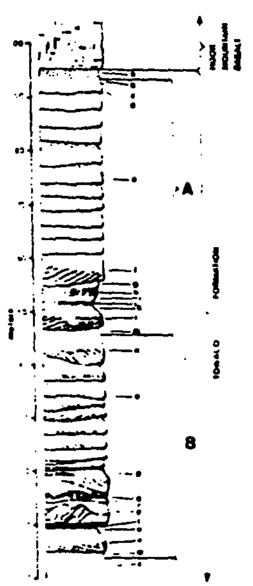


FIG. 10. Type section of the Towaco Formation in the Dinosaur Tract, Essex County Park Commission, Rosaland, New Jersey. For key to individual units see Appendix. A, upper cycle; B, lower cycle (not now exposed).

In several works, the Cushetunk Mountain Pluton has been tentatively referred to the Preakness Basalt (Second Watchung Basalt — see Sanders, 1962; Sanders, 1963). That this unit is definitely intrusive is shown by the following observations: 1, there is no vesicular portion; 2, the unit cuts across bedding; 3, there is a 20+ m thick metamorphic areole in the sediments around the body; 4, the unit is very coarse — in fact, a coarse granophyre pluton with chilled borders. The igneous mass which makes up Cushetunk Mountain is, therefore, an irregular intrusion injected into the upper Passaic Formation (see Puffer and Lechler, 1979).

The Towaco Formation

The name Towaco Formation is here applied to the red, gray, and black sedimentary rocks (and minor volcanoclastics) found below the Hook Mountain Basalt and above the Preakness Mountain Basalt in the Watchung Syncline. The type section is the Essex County Park Commission Dinosaur Tract (Roseland Quarry), Roseland, New Jersey, and is located about 12 km south of the village of Towaco, New Jersey, a classic reptile footprint locality (Lull, 1953), from which the formation takes its name. The type exposure consists of 60 m of the uppermost Towaco Formation making up 20% of the 340 m present in the area (Figure 12).

Laterally continuous, symmetrical sedimentary cycles characterize most of the Towaco Formation. These consist of a central black or gray microlaminated calcareous siltstone surrounded above and below by gray sandstone and siltstone beds arranged in fining-upwards cycles. Above and below these units are red clastics, also arranged in fining-upwards cycles. These symmetrical cycles are a mean of 35 m thick and bear a close resemblance to the East Berlin Formation (Hartford Basin) cycles described by Hubert, Reed, and Carey (1976). Towaco cycles are an order of magnitude thicker than Lockatong or Passaic Formation cycles and differ from the otherwise similar Feltville Formation non-red sequence in containing a predominantly clastic rather than carbonate laminated portion (Figure 3).

Mountain
the Preak-
lt — see
this unit is
lowing ob-
on; 2, the
a 20+ m
nts around
in fact, a
borders.
Cushetunk
rusion in-
tion (see

ere applied
ry rocks
elow the
Preakness
ine. The
Commis-
), Rose-
t 12 km
ersey, a
1953),
ame. The
ppermost
e 340 m

mentary
Forma-
k or gray
rounded
siltstone
Above
also ar-
ymmet-
bear a
Formation
Hubert,
are an
atong or
om the
red se-
clastic
on (Fig-

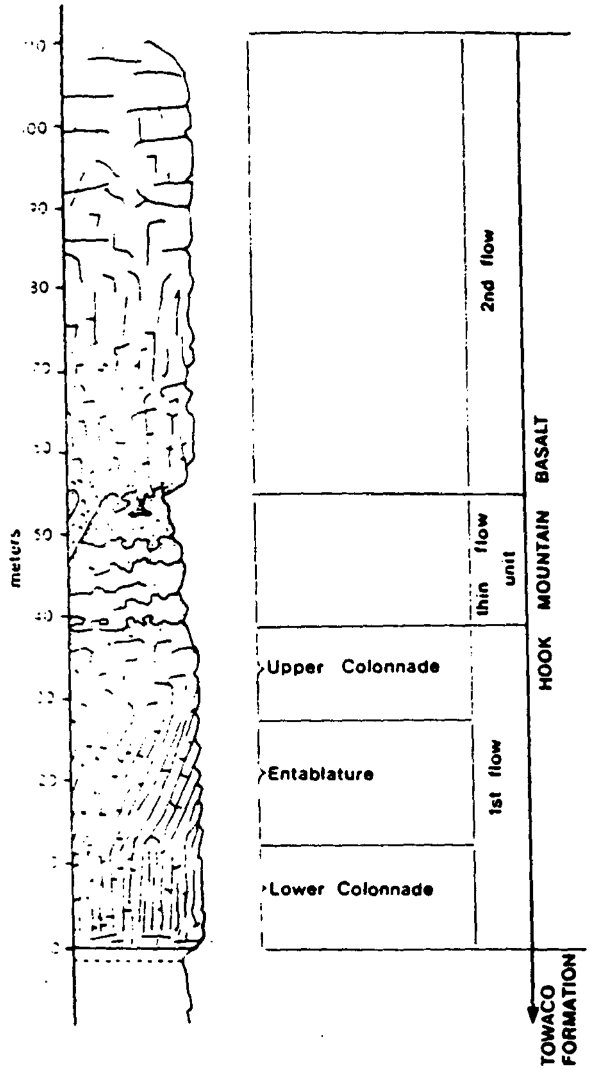


FIG. 11. Type section of the Hook Mountain Basalt. Note two major flow units and interbedded thin pahoehoe flows and possible feeder dike. Section exposed along Interstate Route 80 near Pine Brook, New Jersey.

The uppermost cycle is well exposed in the Roseland Quarry. Formerly another cycle was exposed in an adjacent area (Olsen, 1975), and yet another was located in a nearby well boring. In total, six successive cycles have been identified in the upper half of the Towaco Formation, and most of these have been traced throughout the Watchung Syncline.

There is a thin brown volcanoclastic unit at the top of the Towaco Formation. It is about 1 m thick and occurs at most exposures of the upper Towaco Formation from at least Pompton to Roseland. It is especially well exposed at the Towaco type exposure. Lewis (1908) described unweathered samples of this unit and noted that it consists of altered volcanic glass with inclusions of feldspar and augite and pseudomorphs after olivine in a matrix of brown radial natrolite. Small blocks of vesicular basalt are occasionally present and at Pompton very thin vesicular "flow breccias" are included in the unit (Faust, 1978).

The Hook Mountain Basalt

The uppermost extrusive volcanic unit in the Watchung Syncline is here formally designated the Hook Mountain Basalt (Baird and Take,

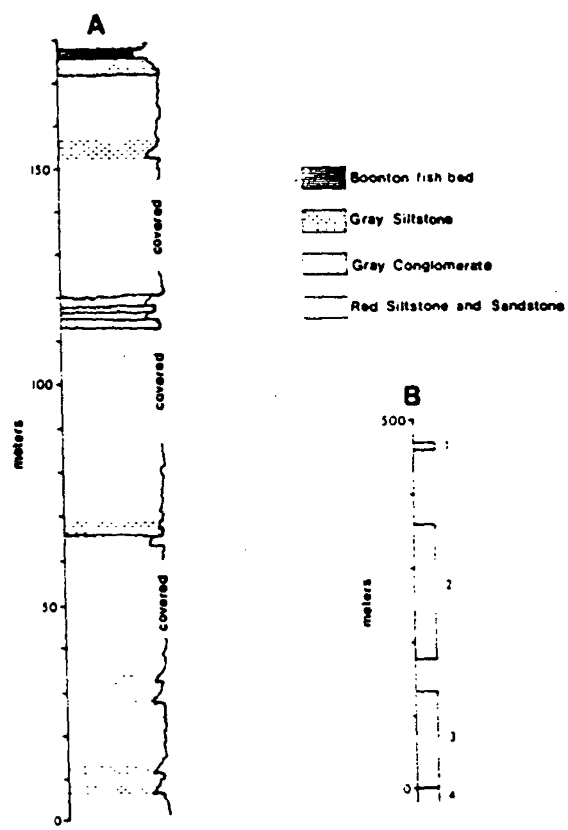


FIG. 12. Type section of the Boonton Formation; A, section exposed along Rockaway River in Boonton, New Jersey; B, composite section of entire preserved Boonton Formation — 1. red matrix conglomerate exposed at Chestnut Hill, Morristown, New Jersey, 2 beds making up the type section, 3. gray, black, brown and red siltstones exposed near Bernardsville, New Jersey, 4. Hook Mountain Basalt.

1959). This formation takes its name from the location of the type section (Figure 12) which cuts along Hook Mountain Road and Interstate Route 80 through the southern terminus of Hook Mountain near Pine Brook, New Jersey. About 80% of the total formation is exposed here. The Hook Mountain Basalt differs markedly in trace element composition from the older basalt formations of the Newark Basin with half as much K_2O and Sr, 20% less Rb, and with a much greater FeO/MgO ratio than the Orange Mountain Basalt (Puffer and Lechler, 1980).

The Hook Mountain Basalt is the thinnest of the three major extrusive formations of the Newark Basin; at its type section it is 110 m thick and it retains this thickness throughout the Watchung Syncline. There are gaps in the ridge made by this basalt between Hook Mountain and Riker Hill, and Riker Hill and Long Hill (see Figure 2). That the basalt extends subsurface across these gaps is shown by the bedrock topography as mapped by Nichols (1968) and aeromagnetic data (Henderson, et al., 1966). The maps of Lewis and Kümmel (1910-1912) and all maps since have omitted the Hook Mountain Basalt in the town of Bernardsville, New Jersey, and this is corrected here (Figure 2).

Two flows have been recognized through most of the Watchung Syncline. At the type section, the lower flow is 57 m thick and shows a complete Tomkeiff structural sequence (Figure 12), while the upper flow is 40 m thick but more massive, without clear columnar jointing. As is the case for the flows which make up the two older basalt formations of the Newark Basin, it is not definitely known whether the upper and lower flows of the Hook Mountain Basalt represent continuous sheets over the extent of the whole formation.

The Boonton Formation

Overlying the Hook Mountain Basalt are sedimentary rocks (Baird and Take, 1959) termed the Boonton and Whitehall beds of the Brunswick Formation. The formal name Boonton Formation is suggested for these beds, the type exposure (Figure 13) being along the Rockaway River near Boonton, New Jersey. The Boonton Formation is the youngest sedimentary unit in the Newark Basin and consists of at least 500 m of red, brown, gray, and black fine-to-coarse clastics and minor evaporitic beds.

The stratigraphically lowest beds in the Boonton Formation are well exposed near Bernardsville, New Jersey. Here the formation consists of blocky to finely bedded red, gray, brown, and black, often dolomitic, siltstone. Thin (1 - 4 m) beds riddled with "hopper casts" (pseudomorphs after gypsum, glauberite, and ?halite) are common in sequences of all colors. The different colors or textures of beds do not seem to be arranged in any obvious or consistent cyclic pattern and do not resemble other units in the Newark Basin. Stratigraphically above these beds is a sequence of well bedded red siltstones and sandstone beds (mean thickness 35 m) alternating with thinner beds of gray and gray-green siltstones (mean thickness 2 m). The longest continuous section of these beds is the type section (Figures 3 and 12). The uppermost beds at the type section include a fossil fish-bearing calcareous gray siltstone laminite at least 1 m thick. This is the famous Boonton Fish Bed (Smith, 1900; Schaeffer and McDonald, 1978). Also in this section are gray and brown conglomerate units up to 0.5 m thick. Along the western edge of the Watchung Syncline the Boonton Formation contains thick sequences of red- and gray-matrix conglomerate and breccia. The relationship of these units to the finer portions of the formation is unclear.

NOTES ON THE STRUCTURAL GEOLOGY OF THE NEWARK BASIN

There are very few generalities which can be applied with confidence to Newark Basin structure. It is generally conceded, however, that: 1, Newark sediments rest with a profound unconformity on the basement rocks; 2, Newark rocks are overlain with an angular unconformity by post-Jurassic rocks; 3, most Newark beds dip to the northwest 10° - 20°; 4, there are a series of faults of large displacement which cut the Newark deposits into a series of major fault blocks; 5, there are at least some smaller faults; 6, beds of the west side of fault blocks tend to be folded into a series of anticlines and synclines with their axes perpendicular to the long axes of fault

077

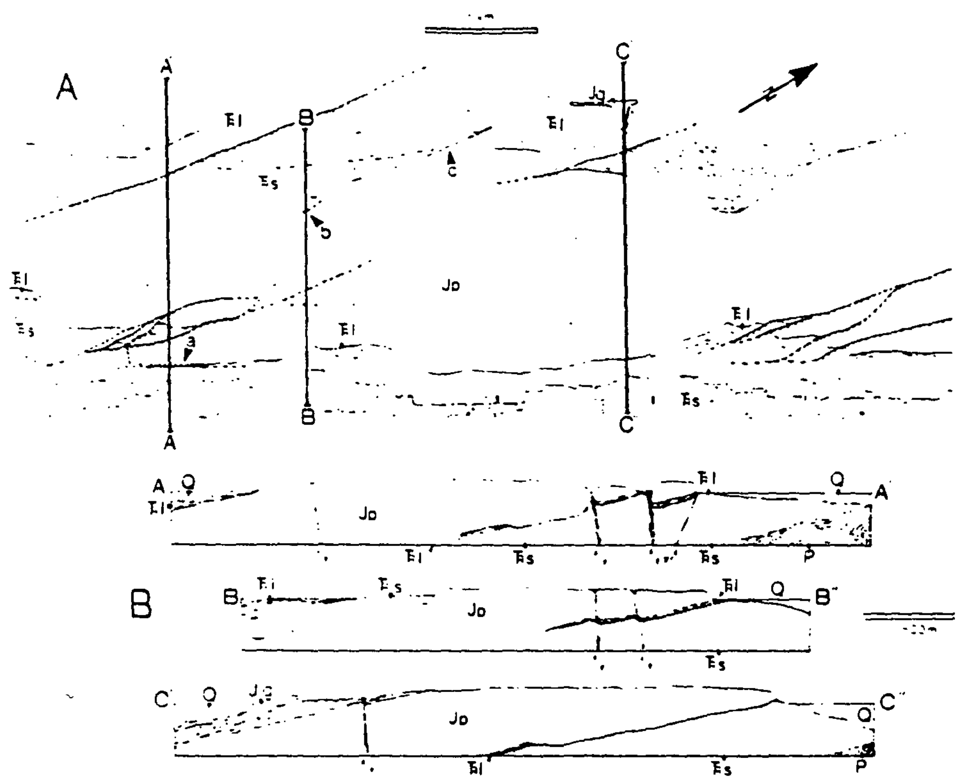


FIG. 13. Lincoln Tunnel area. Weehawken and Central Park Quadrangles. A. map of major lithologic units and structural features: B. sections through the Palisades Ridge. No vertical exaggeration. Abbreviations of lithologic units as follows: 1. Triassic Lockatong Formation; s. Triassic Stockton Formation; Jp. Jurassic Palisade Sill; Jg. Jurassic Granton Sill; P. metamorphic basement rocks of the New York City Group. a, b, and c refer to areas discussed in text. Faults with teeth on down dropped side.

blocks; and 7, beds on the east side of the same blocks tend not to be folded. The relationships of Newark Basin sediments to basin margins (i.e., faults or onlaps), the thicknesses of Newark strata, the number, distribution, and direction of smaller faults, the sense of motion of the major and minor faults (normal or oblique or strike-slip), and the physical relationships of joints to faults and folds have never been satisfactorily resolved, although research toward this goal is underway (Ratcliff, 1979). Obviously, all questions involving these features cannot be discussed in this paper, both because of lack of space and a lack of data. Enough observations have been made, however, to show some aspects of local structural style (Figures 5, 13, 14). There is no doubt, however, that Newark Basin structure is complex, and that further observation will change the results extracted even from the limited areas discussed here.

The Lincoln Tunnel area (Figure 13) of the Palisades Ridge forms part of the eastern edge of the Newark Basin and is cut by a series of putatively normal faults striking N 5-10° E, dipping vertically to 40° east, and with displacements of from 1 to 100 m (Fluur, 1941; Van Houten, 1969). Crush zones vary from a few centimeters to several meters (Fluur, 1941). There is also at least one major northwest-dipping normal fault on the east face of the Palisades (Kings Bluff) similar to those inferred to exist in the southern part of the Newark Basin by Sumner (1979) on the basis of geophysical data. This fault (a in Figure 14) was encountered during the construction of the north tube of the Lincoln Tunnel and is described in Thomas Fluur's unsurpassed work of the geology of the tunnel (Fluur, 1941). "The strike of the fault is approximately N 35° E and the dip 65° NW. Slikensides on the fault indicate that the movement had carried the block on the west side of the fault downward in respect to the east side with practically no horizontal component of movement. The fault is accompanied by numerous joints in both the shale and sandstone members adjacent. . . . The actual crush zone of the fault is only 0.5′ wide. . . . The movement was sufficient to bring up sandstones from a horizon much below that of the baked shales and in the movement the edges of the shale members were dragged upwards, so that close to the fault they show a maximum dip of 55° instead of the usual 15°" (p. 197). Finally, Fluur maps the presence of several minor faults striking S 80° E.

On the west slope of the Palisades Ridge, 1.5 km northwest of the Lincoln Tunnel, the sediment diabase contact is a plane tilting about 45° - 70° NW and striking an average of N 5° E for a distance of 3.25 km (Figure 13). This is one of the areas where the Palisade Diabase has more of a dike than sill appearance (Darton, 1892, 1902, 1908; Van Houten, 1969). For a distance of about 2 km, coarse cream- or buff-colored sandstones (apparently upper Stockton Formation) rest against the steeply dipping diabase wall. At a contact (b of Figure 14) described by Darton (1892, 1902) at the former West Shore Railroad Tunnel, the contact is welded at places and slightly undulatory. At an exposure 2 km north (c of Figure 14), however, there are well developed parting planes between the diabase and sandstone. In this area the sandstone, but not the diabase, is fractured and slikensided, the sense of motion being normal relative to the contact. The sandstone bedding is also dragged upwards at the contact. Just north of the latter outcrop (c of Figure 14), the Lockatong-Palisade-Sill contact is exposed. Lockatong Formation is exposed from there north to at least the George Washington Bridge. Although the situation is somewhat ambiguous, the contact and map relations are commensurate with a hypothesis of stepping up of the Palisade Sill in this region, so that the entire mass of upper Stockton and basal

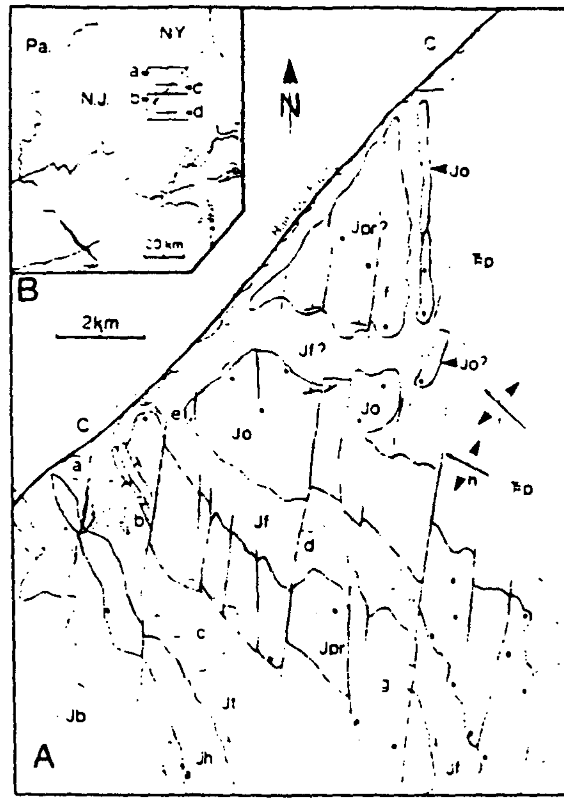


FIG. 14. Oakland Area, along Ramapo Fault, northwestern Newark Basin.

A, Preliminary geologic map: a, Pompton Lake; b, Pines Lake; c, Pequannock Reservoir; d, Franklin Lake; e, town of Oakland, New Jersey; f, Campgaw Mountain; g, Preakness Mountain; h, Oakland Anticline; i, Campgaw Syncline; C, crystalline rocks of the western highlands; p, Triassic Passaic Formation, conglomeratic facies; Jo, Jurassic Orange Mountain Basalt; Jf, Jurassic Feltville Formation; Jpr, Jurassic Preakness Mountain Basalt; Jt, Jurassic Towaco Formation; Jh, Jurassic Hook Mountain Basalt; Jb, Jurassic Boonton Formation. Note mapped distribution of laminite portions of Towaco cycles (dashed lines between Pines (a) and Pompton (b) Lakes) and mapped distribution of the three flows of the Preakness Mountain Basalt above and through Pines Lake (b). Also note that the distribution of major lithologic units is primarily based on maps of Darton, *et al.* (1908) and Lewis and Kümmel (1910-1912) with some major revision, especially in the areas around Pequannock Reservoir and Campgaw Mountain, where data from Henderson *et al.* (dots represent the latter's mapped aeromagnetic highs) and my own observations have been used.

B, Key, showing position of Oakland area (shaded) in Newark Basin and the relevant quadrangle sheets (topographic): a, Wanaque Quadrangle; b, Pompton Plains Quadrangle; c, Ramsey Quadrangle; d, Paterson Quadrangle.

Lockatong is lifted the thickness of the sill on the west side of the Palisade ridge, while on the east side the diabase rests above the stratigraphically equivalent portion of the Stockton and Lockatong (Figure 13).

The west edge of the northern part of the Newark Basin near Oakland, New Jersey (Figure 14) is like the east wall of the Hartford Basin in having served as a model for interpreting other Newark Supergroup Basins (Russell, 1892; Russell, 1922; Barrell, 1915; Sanders, 1963 — but see Faill, 1973). The nearly straight truncation of all Newark deposits and associated structures along a line striking N 45° E, local drag folding, and direct observation by borings (Ratcliff, 1979) indicate that a major fault, the Ramapo Fault, forms the northwestern edge of the Newark Basin, from at least Morristown, New Jersey to Theills, New York (60 km). Locally, at least, the fault dips 60° southeast (Ratcliff, 1979). At Morristown there is an offset to the east in the Ramapo Fault, and southwest of Bernardsville, New Jersey, the Ramapo Fault appears to join the braided northern continuation of the Hopewell Fault as suggested by Sanders (1962) and Manspiezer (pers. comm.). The northern portion of the Ramapo Fault is offset again at Theills, probably continuing northeast into Westchester County, New York (Ratcliff, 1973). As illustrated in the preceding discussion of the Cushetunk area and the structural map in Figure 2, such a long, linear fault as the Ramapo is, in truth, atypical for the western margin of the Newark Basin (as noted by Faill, 1973).

Newark Basin strata are warped into a series of anticlines and synclines along the Ramapo Fault, much as they are along the Flemington and Hopewell faults (Wheeler, 1939). These folds are oriented with their long axes more or less normal to the strike of the fault. These folds are, in turn, cut by a series of smaller faults (most of which probably have a large dip-slip component) downdropping to the east and striking, like those of the Lincoln Tunnel region (Figure 13) N 5° - 10° E (Figure 14). While apparent map offsets due to these faults are most obvious close to the Ramapo Fault (Figure 2), some of this series make it as far south as Newark, New Jersey; in fact, both the type section of the Orange Mountain and Preakness Mountain Basalts are cut by a series of faults. It is not clear if any of these faults completely cross the basin, however. Like the folds along the basin edge, these faults terminate to the north along the Ramapo Fault.

Along the northwest border of the Newark Basin, in the Cushetunk Mountain area (previously mentioned, Figure 5), Newark strata onlap onto a step-faulted basement. To the west of Bernardsville, the border of the Newark Basin consists of a series of faults trending N 35° - 50° E and N 5° -10° E, the latter being truncated by the former, and a series of onlaps of Stockton through Passaic Formation on basement. As is evident from Figure 5, the pre-Newark floor must have been some 5,000 m deeper near Clinton than at Potterstown during the deposition of the Orange Mountain Basalt. These rather complex relationships are best explained by a hypothesis of "piano-key" fault blocks bound by faults with a major normal component striking N 35° -50° E. During deposition of the younger Newark Basin beds, these blocks formed ramps which dipped southwest into the basin along their long axes at about 13° and thus resemble the right echelon relay faults and ramps described by Kelly (1979) for the Rio Grande Rift. Near Jutland, New Jersey, basal Passaic Formation apparently laps over one of the N 40° E faults, presumably indicating that the fault ceased movement prior to the deposition of these Passaic beds, an interpretation implied by McLaughlin (1946).

Thus, on the basis of these three areas it is possible to conclude that Newark Basin strata are cut by at least three sets of faults, most probably normal: one set striking N 30° - 50° E, dipping southeast on the west edge of the basin; another, as yet poorly known set with the same strike as the latter but dipping northwest, dropping beds down to the northwest; and a third set striking N 5° - 10° E. The southeast dipping northeast striking faults truncate the major folds in Newark strata as well as the other faults, while the more northerly striking faults cut but do not terminate folds and are responsible for the difficulty in making reliable thickness estimates of Newark Basin beds. There are definitely more faults present and of more varied nature than mentioned above. Kümmel (1897) and Darton (1890) show the will serve as a reference standard for comparison with other early Mesozoic areas.

The basic biostratigraphic framework for Newark Basin deposits has been outlined by Olsen and Galton (1977) and Cornet (1977) and the details of this correlation will be given elsewhere (Olsen, McCune, and Thomson, in press; Olsen, Baird, and Salvia, MS; and Colbert and Olsen, MS). At this time it is necessary to present the distribution of taxa within the Passaic through Boonton formations and tie these in with the regional correlation (Figure 15).

For regional correlation, relatively strong emphasis has been placed on the distribution of palynomorph taxa (Cornet, 1977, and pers. comm.). This reliance has been especially strong for correlation between the upper Newark and the European Early Jurassic (see Figure 15). Tetrapod data, both in the form of skeletal remains and footprints, parallel the palynomorph data, and have been essential in correlating regions from which floral data is not available (such as the upper Stormberg — J. M. Anderson, pers. comm.). For the internal correlation of the Early Jurassic portions of the Newark, however, the biostratigraphic subdivisions based on pollen and spores have proved too broad (Cornet, 1977). In these areas, fossil fish have provided a means of correlation (Olsen, McCune, and Thomson, in press).

The broad aspects of this biostratigraphic correlation are in agreement with most geophysical data, significantly the paleomagnetic work of McIntosh (1976) and Reeve and Helsley (1972) on the Newark Basin section and the Chinle Formation (southwestern United States), as well as with the paleomagnetic work of DeBoer (1968). In addition, radiometric dates available for Newark Basin basalts are in agreement with a Jurassic age for these units (Armstrong and Besancon, 1970; Dallmeyer, 1975; Sutter and Smith, 1979; W. D. Masterson and K. K. Turekian, pers. comm.). It must be noted, however, that the geophysical techniques used to date may be too inconsistent for the data to be used in fine scale correlation among the various individual formations of the Newark Supergroup.

ACKNOWLEDGEMENTS

For the original impetus for this work I thank Donald Baird, Bruce Cornet, Nicholas G. McDonald, John Rodgers, Bobb Schaeffer, Keith Thomson, Franklin Van Houten, and Karl Waage. In addition to these same people, I thank George Bain, John Hubert, Anthony Lessa, Amy Litt, Amy McCune, Warren Manspiezer, John Ostrom, Wallace Phelps, Stan Rachootin, William Sacco, Robert Salvia, and Peter Stringer. Field work for this study was supported by the Peabody Museum of Yale University and grants from the National Science Foundation (numbers BMS 75-17096, BMS 74-07759, GS-28823X, and DEB 77-08412 to Keith Thomson). Finally, I thank Donald Baird, Amy Litt, Amy McCune, Kevin Padian, Stan Rachootin, John Rodgers, Bruce H. Tiffany, and an anonymous reviewer for reading the manuscript and suggesting changes which substantially improved it. Naturally any opinions and errors of commission or omission are my own.

LITERATURE CITED

American Commission on Stratigraphic Nomenclature. 1961. Code of Stratigraphic Nomenclature. *Amer. Assoc. Petroleum Geologists Bull.*, 45:645-665.

Armstrong, R. L. and Besancon, J. 1970. A Triassic time scale dilemma: K-Ar dating of Upper Triassic mafic igneous rocks, eastern U.S.A. and Canada and Post-Triassic plutons, western Idaho, U.S.A. *Eclogae Geol. Helvetiae*, 63:15-28.

Bailey, W. S., Salisbury, R. D., Kümmel, H. B. 1914. Raritan Folio, N.J. *U.S. Geol. Surv., Geol. Atlas U.S.*, Folio 191.

Baird, D. 1957. Triassic reptile footprint faunules from Milford, New Jersey. *Bull. Mus. Comp. Zool.* (Harvard University), 117:449-520.

Baird, D., and Take, W. F. 1959. Triassic reptiles from Nova Scotia (Abst.). *Geol. Soc. Amer., Bull.*, 70:1565-1566.

Barrell, J. 1915. Central Connecticut in the geologic past. *Conn. Geol. Nat. Hist. Surv., Bull.*, 23. 44 p.

Bascom, F., Clark, W. B., Darton, N. H., Kümmel, H. B., Salisbury, R. D., Miller, B. L., Knapp, G. N. 1909a. Philadelphia Folio, Germantown, Chester, and Philadelphia Quadrangles, Pennsylvania, New Jersey, and Delaware. *U.S. Geol Surv. Geol. Atlas U.S.*, Folio 162.

Bascom, F., Darton, N. H., Kümmel, H. B., Clark, W. B., Miller, B. L., and Salisbury, R. D. 1909b. Trenton Folio, N.J. — Pa. *U.S. Geol. Surv., Geol. Atlas U.S.*, Folio 167.

BASCOM, F. AND STOSE, G. W. 1938. Geology and mineral resources of the Hinevbrook and Phoenixville Quadrangles, Pennsylvania. *U.S. Geol. Surv., Bull.*, 891, 145 p.

BOCK, W. 1969. The American Triassic flora and global distribution. *Geological Center, North Wales, Pennsylvania, Research Series*, 3 and 5, 406 p.

BUCHER, W. H. AND KERR, P. F. 1948. Excursion to the 1st Watchung Basalt at Paterson, New Jersey. *In Geol. Soc. Amer. Guidebook, 61st Ann. Mtg.*, 109-119.

CALVER, J. L. 1963. *Geologic Map of Virginia*. Va. Dept. Conserv. Econ. Development. Charlottesville.

COLBERT, E. H. 1965. A phytosaur from North Bergen, New Jersey. *Amer. Mus. Nov.*, 2230:1-25.

COLBERT, E. H. AND OLSEN, P. E., MS. A new strange reptile from the Late Triassic Lockatong Formation (Newark Supergroup) of New Jersey.

COOK, E. H. 1868. *Geology of New Jersey*. New Jersey Geological Survey, Newark, 900 p.

COOK, E. H. 1882. Geological work in progress. 1 Red Sandstone District. *Ann. Rept. State Geol. New Jersey*, (1882), 11-66.

CORNET, B. 1977. The palynostratigraphy and age of the Newark Supergroup. Unpubl. Ph.D. Thesis, Pennsylvania State University, 506 p.

CORNET, B., MCDONALD, N. G. AND TRAVERSE, A. 1973. Fossil spores, pollen, and fishes from Connecticut indicate Early Jurassic age for part of the Newark Group. *Science*, 182:1243-1246.

CORNET, B. AND TRAVERSE, A. 1975. Palynological contribution to the chronology and stratigraphy of the Hartford Basin in Connecticut and Massachusetts. *Geosci. Man.*, 11:1-33.

DALLMEYER, R. D. 1975. The Palisades Sill: A Jurassic intrusion? Evidence from $^{40}Ar/^{39}Ar$ incremental release ages. *Geology*, 3:243-245.

DARTON, N. H. 1890. The relations of the trap of the Newark System in the New Jersey region. *U.S. Geol. Surv., Bull.*, 67, 82 p.

DARTON, N. H. 1902. Jura Trias Rocks. *In*, New York City Folio, Paterson, Harlem, Staten Island, and Brooklyn quadrangles. *U.S. Geol. Surv., Geol. Atlas U.S.*, Folio 83:6-10.

DARTON, N. H., BAYLEY, W. S., SALISBURY, R. D. AND KÜMMEL, H. B. 1908. Passaic Folio, New Jersey-New York. *U.S. Geol. Surv., Geol. Atlas U.S.*, Folio 157.

DEBOER, J. 1968. Palaeomagnetic differentiation and correlation of the Late Triassic volcanic rocks in the central Appalachians (with special reference to the Connecticut Valley). *Geol. Soc. Amer., Bull.*, 79: 609-626.

DUNLEAVY, J. M. 1975. A geophysical investigation of the contact along the northern margin of the Newark Triassic Basin, Hosensack, Pennsylvania to Gladstone, New Jersey. Unpubl. M.Sc. Thesis, Lehigh University, +68 p.

FAILL, R. T. 1973. Tectonic development of the Triassic Newark-Gettysburg basin in Pennsylvania. *Geol. Soc. Amer., Bull.*, 84:725-740.

FAUST, G. T. 1975. A review and interpretation of the geologic setting of the Watchung Basalt flows, New Jersey. *U.S. Geol. Surv., Surv. Prof. Papers*, 864, A1-A42.

FENNER, C. N. 1908. Features indicative of physiographic conditions prevailing at the time of the trap extrusions in New Jersey. *J. Geol.*, 16:299-327.

FLURR, T. W. 1941. The geology of the Lincoln Tunnel. *Rocks and Minerals*, 16:115-119, 155-160, 195-198, 235-239.

GEIGER, F. J., PUFFER, J. H. AND LECHLER, P. J. 1980. Geochemical evidence of the former extent of the Watchung Basalts of New Jersey and of the eruption of the Palisades Magma onto the floor of the Newark Basin (Abst.). *Geol. Soc. Amer., Abst. with Prog.*, 12, 2, 37.

GEYER, A. R., GRAY, C., MCLAUGHLIN, D. B. AND MOSELEY, J. R. 1958. Geology of the Lebanon Quadrangle. *Pa. Geol. Surv. 4th Ser. Geol. Atlas*, 167C.

GEYER, A. R., BUCKWALTER, J. V., MCLAUGHLIN, D. B. AND GRAY, C. 1963. Geology and mineral resources of the Wolmelsdorf Quadrangle. *Pa. Geol. 4th Ser. Bull.*, A177C, 96 p.

GLAESER. 1965. Provenance, dispersal, and depositional environments of Triassic sediments in Newark Gettysburg Basin. *Pa. Geol. Surv. 4th Ser., Bull.*, G43, 168 p.

GRAY, C. 1958. Geology of the Richland Quadrangle. *Pa Geol. Surv. 4th Ser. Geol. Atlas*, 167D.

HENDERSON, J. R., ANDREASEN, G. E. AND PETTY, A. J. 1966. Aeromagnetic map of northern New Jersey and adjacent parts of New York and Pennsylvania. *U.S. Geol. Surv., Geophysical Inv.* Map GP-562.

INTERNATIONAL SUBCOMMISSION ON STRATIGRAPHIC CLASSIFICATION (Hollis D. Hedberg, ed.). 1976. *International Stratigraphic Guide*. New York, 199 p.

JOHNSTON, H. 1957. Trap rock aggregates in New Jersey. *In Geol. Soc. Amer. Guidebook for Field Trips* (1957), 42-45.

KALM, P. 1753-1761. *En Resa til Norra America*. 3 vol., Stockholm.

KELLEY, V. C. 1979. Tectonics, Middle Rio Grande Rift, New Mexico. *In* Reicker, R. E. (ed.), *Rio Grande Rift: Tectonics and Magmatism*. American Geophysical Union, Washington, D.C., 57-70.

KING, P. B., *et al.* 1944. *Tectonic Map of the United States*. Tulsa.

KLEIN, G. DEV. 1962. Triassic sedimentation, Maritime Provinces, Canada. *Geol. Soc. Amer. Bull.*, 73:1127-1146.

KÜMMEL, H. B. 1897. The Newark System, report of progress. *New Jersey Geol. Surv. Ann. Rept. State Geol.*, 1896:25-88.

KÜMMEL, H. B. 1898. The Newark System or red sandstone belt. *N.J. Geol. Surv. Ann. Rept. State Geol.*, 1897:23-159.

KÜMMEL, H. B. 1899. The Newark or red sandstone rocks of Rockland County, New York. *18th Ann. Rept. State Geol. N.Y.*, 9-50.

LEHMANN, E. P. 1959. The bedrock geology of the Middletown Quadrangle with map. *Conn. Geol. Nat. Hist. Surv., Quadrangle Rept.*, 8:1-40.

LEWIS, J. V. 1907a. Structure and correlation of Newark Group rocks of New Jersey. *Geol. Soc. Amer. Bull.*, 18:195-210.

LEWIS, J. V. 1907b. The double crest of Second Watchung Mt. *Jour. Geol.*, 15:34-45.

LEWIS, J. V. 1908. Petrography of the Newark igneous rocks of New Jersey. *N.J. Geol. Surv. Ann. Rept. State Geol.*, 1908:97-167.

LEWIS, J. V. AND KÜMMEL, H. B. 1910-1912. *Geologic Map of New Jersey*. N.J. Geol. Surv., Trenton.

LULL, R. S. 1953. *Triassic Life of the Connecticut Valley. Conn. Geol. Nat. Hist. Surv. Bull.*, 81, 336 p.

LYMAN, B. S. 1895. Report on the New Red of Bucks and Montgomery Counties, Pennsylvania. *Pa. Geol. Surv. 2nd Summary Final Rept.*, No. 3, Pt. 2, 2589-2638.

MANSPIEZER, W. 1969. Radial and concentric joints, First Watchung Mountains, New Jersey (Abst.). *Geol. Soc. Amer. 4th Ann. Mtg. N. E. Sect.*, (1969) 38-39.

MCINTOSH, W. C. 1976. Paleomagnetic reversals in the Newark Group, Brunswick Formation of eastern Pennsylvania and central New Jersey. Unpubl. B.Sc. Thesis, Princeton University, +78 p.

MCLAUGHLIN, D. B. 1933. A note on the stratigraphy of the Brunswick Formation (Newark) in Pennsylvania. *Mich. Acad. Sci. Papers*, 18:421-435.

MCLAUGHLIN, D. B. 1941. The distribution of minor faults in Pennsylvania. *Mich. Acad. Sci., Arts, Letters*, 27:465-479.

MCLAUGHLIN, D. B. 1943. The Revere well and Triassic stratigraphy. *Pa. Acad. Sci. Proc.*, 17: 104-110.

MCLAUGHLIN, D. B. 1945. Type sections of the Stockton and Lockatong Formations. *Pa. Acad. Sci. Proc.*, 14:102-113.

MCLAUGHLIN, D. B. 1946. The Triassic rocks of the Hunterdon Plateau, New Jersey. *Pa. Acad. Sci. Proc.*, 20:89-98.

MCLAUGHLIN, D. B. 1948. Continuity of strata in the Newark Series. *Mich. Acad. Sci. Papers*, 32 (1946):295-303.

NICHOLS, W. D. 1968. Bedrock topography of eastern Morris and western Essex counties, New Jersey. *U.S. Geol. Surv. Misc. Inv.*, Map I-549.

OLSEN, P. E. 1975. The microstratigraphy of the Roseland Quarry (Early Jurassic). Unpubl. Open File Report to Essex County Park Commission, 165 p.

OLSEN, P. E. 1978. On the use of the term Newark for Triassic and Early Jurassic rocks of eastern North America. *Newsl. Stratigr.*, 7:90-95.

OLSEN, P. E. AND GALTON, P. M. 1977. Triassic-Jurassic tetrapod extinctions: Are they real? *Science*, 197:983-986.

OLSEN, P. E., MCCUNE, A. R. AND THOMSON, K. S. (in press). Correlation of the Early Mesozoic Newark Supergroup (eastern North America) by vertebrates, especially fishes. *Amer. Jour. Sci.*

OLSEN, P. E. AND COLBERT, E. H. MS. *Tanytrachelos* from Granton Quarry (Lockatong Formation, Newark Supergroup), North Bergen, New Jersey.

OLSEN, P. E., BAIRD, D. AND SALVIA, R. F. MS. Vertebrates from the Stockton Formation of New Jersey (Newark Supergroup, Newark Basin).

PUFFER, J. H. AND LECHLER, P. 1979. The geochemistry of Cushetunk Mountain, New Jersey. *Bull. N.J. Acad. Sci.*, 24:1-5.

PUFFER, J. H. AND LECHLER, P. 1980. Geochemical cross sections through the Watchung Basalt of New Jersey: Summary. *Geol. Soc. Amer. Bull.*, pt. I. 91:7-10.

RATCLIFF, N. M. 1977. Cataclastic rocks from the Ramapo Fault and evaluation of evidence for reactivation on the basis of new core data. *Geol. Soc. Amer.* (Abst.), 11:1, 50.

REEVE, S. G. AND HELSLEY, C. E. 1972. Magnetic reversal sequence in the upper part of the Chinle Formation, Montova, New Mexico. *Geol. Soc. Amer. Bull.*, 83:3795-3812.

RUSSELL, I. C. 1892. Correlation Papers: The Newark System. *U.S. Geol. Surv. Bull.*, 85, 344 p.

RUSSELL, W. L. 1922. The structural and stratigraphic relations of the great Triassic fault of southern Connecticut. *Amer. Jour. Sci., 5th ser.*, 4:483-497.

SANDERS, J. E. 1962. Strike-slip displacement on faults in Triassic rocks in New Jersey. *Science*, 136:40-42.

SANDERS, J. E. 1963. Late Triassic tectonic history of northeastern United States. *Amer. Jour. Sci.*, 261: 501-524.

SANDERS, J. E. 1974. *Guidebook to Field Trip in Rockland County, N.Y. Petro. Explor. Soc. N.Y.*, New York, 87 p.

SANDERS, J. E. MS. Thickness of Triassic strata, northeastern United States, 86 p.

SCHAEFFER, B. AND MCDONALD, N. G. 1978. Redfieldiid fishes from the Triassic-Liassic Newark Supergroup of eastern North America. *Bull. Amer. Mus. Nat. Hist.*, 159:129-174.

SCHOPF, G. J. 1753-1761. *Reise durch einige der mittlern und sudlichen vereinigten nordamerikanischen staaten. . . 1783 und 1784*. Erlangen, 1788.

SMITH, J. H. 1900. Fish four million years old. *Metropolitan Magazine*, 12:498-506.

SUMNER, J. R. 1979. Geophysical investigation of the structural framework of the Newark-Gettysburg Triassic basin, Pennsylvania. *Geol. Soc. Amer. Bull.*, 88:935-942.

SUTTER, J. F. AND SMITH, T. E. 1979. $^{40}Ar/^{39}Ar$ ages of diabase intrusions from Newark trend basins in Connecticut and Maryland. Initiation of central Atlantic rifting. *Amer. Jour. Sci.*, 279:808-831.

THOMSON, K. S. 1979. Old lakes and new fossils. *Yale Alumni Mag. Jour.*, 42:25-27.

TOMKEIFF, S. I. 1940. The basalt lavas of the Giant's Causeway, District of Northern Ireland. *Bull. Volcan. Ser. 2*, 6:89-143.

VAN HOUTEN, F. 1962. Cyclic sedimentation and the origin of analcime-rich upper Triassic Lockatong Formation, west-central New Jersey and adjacent Pennsylvania. *Amer. Jour. Sci.*, 260:561-576.

VAN HOUTEN, F. 1964. Cyclic Lacustrine Sedimentation, Upper Triassic Lockatong Formation, central New Jersey and adjacent Pennsylvania. *In* Symposium on Cyclic Sedimentation. *State Geol. Surv. Kansas Bull.*, 169, 2:497-531.

VAN HOUTEN, F. 1965. Composition of Triassic and associated formations of Newark Group, central New Jersey and adjacent Pennsylvania. *Amer. Jour. Sci.*, 263:825-863.

VAN HOUTEN, F. 1969. Late Triassic Newark Group, north central New Jersey and adjacent Pennsylvania and New York. *In Geology of selected areas in New Jersey and eastern Pennsylvania.* (Subitzki, S., ed.), Rutgers University Press, New Brunswick, pp. 314-347.

VAN HOUTEN, F. 1977. Triassic-Liassic deposits of Morocco and eastern North America: comparison. *Amer. Assoc. Petrol. Geol.*, 61:79-99.

WEIGAND, P. W. AND RAGLAND, P. G. 1970. Geochemistry of Mesozoic dolerite dikes from eastern North America. *Contributions to Mineralogy and Petrology*, 29:195-214.

WHEELER, G. 1939. Triassic fault-line deflections and associated warping. *Jour. Geol.*, 47:337-370.

WHERRY, E. T. 1910. Contribution to the minerology of the Newark Group in Pennsylvania. *Wagner Free Inst. Sci. Trans.*, 7:5-27.

WILLARD, B., FREEDMAN, J., MCLAUGHLIN, D. B. AND OTHERS. 1959. Geology and mineral resources of Bucks County, Pennsylvania. *Penn. Geol. Surv. 4th Ser. Bull.*, C9, 243 p.

APPENDIX

Type Section of the Passaic Formation

Thickness (m)	Description
Section A	Base of section A is 427 m above and 3.4 km west of last exposures of Lockatong along Rt. 80 (all sections measured from top down).
1.2	red blocky siltstone
1.8	red massive feldspathic sandstone
.6	red siltstone
1.2	red massive feldspathic sandstone, fining-upwards
3.1	red blocky siltstone
3.0	red fine feldspathic sandstone, fining-upwards
1.5	red blocky siltstone
1.8	red cross-bedded feldspathic sandstone, fining-upwards
26.0	covered
4.6	red siltstone
41.0	covered
6.1	red fissile siltstone
4.6	red interbedded sandstone and siltstone
3.0	red siltstone
0.6	red feldspathic sandstone, fining-upwards
0.3	red blocky siltstone
1.8	red feldspathic sandstone, white near diabase, fining upwards
1.5	diabase dike
+3	red blocky siltstone, black near diabase
5.0	covered

Thickness (m)	Description
.9	red cross-bedded sandstone and siltstone, fining-upwards
.8	red planer, thin-bedded sandstone
4.0	covered
4.6	red interbedded siltstone and sandstone
2.0	covered
1.2	red burrowed sandstone and siltstone
48.0	covered
.8	red blocky siltstone
1.5	red feldspathic sandstone, strongly downcutting, fining-upwards
3.4	red blocky siltstone
.7	red feldspathic sandstone, fining-upwards, deeply downcutting
.3	red blocky siltstone, covered in places
+1	red fine feldspathic sandstone
Section B	Base of exposure 488 m above and 3.4 km west of top of section A, along Rt. 80 (section measured from top down).
.61	red fissile siltstone
.15	yellow-orange planer-bedded coarse siltstone
.91	red blocky siltstone
.15	yellow-orange cross-bedded base, planer-bedded top, fine sandstone
.20	red blocky siltstone
.30	yellow-orange cross-bedded base, planer-bedded top, fine sandstone
.90	red fissile siltstone
.93	red blocky siltstone, fining-upwards
.32	red fissile siltstone
.60	red siltstone
.76	red fissile siltstone
.60	red coarse feldspathic sandstone, fining-upwards
.30	red blocky siltstone
1.32	red very fine sandstone, fining-upwards
+1.52	red blocky siltstone
Section C	Base of exposure 244 m above and 1.8 km west of top of section B, along Rt. 80 (sections measured from top down).
1.5	red, very irregular, trough cross-bedded sandstone grading upwards into siltstones, laminated carbonate-rich oblong chips and concentric accretions at base
1.5	same as above
Section D	Base of exposure 1320 m above and 6.9 km west of top of section C (section measured from top down).
3.0	red massive, cross-bedded sandstone
Section E	Base of exposure 554 m above and 2.9 km west of top of section D (section measured from top down).
+10.0	massive basalt — base of Orange Mountain Basalt
.9	brown massive sandstone welded to basalt
1.8	red siltstone with numerous small carbonate nodules
.93	red siltstone
1.5	red sandstone, fining-upwards

085

Type section of the Feltville Formation and key to figure 7. Section exposed along Blue Brook about 1 km southwest of the dam for Lake Surprise in Watchung Reservation, Union County, New Jersey (sections measured from top down).

Unit letter in Figure 7	Thickness (m)	Description
Section A of Figure 7		
a	+1	buff to pink, cross and planer-bedded feldspathic sandstone with interbeds of red siltstone upward grading into
b	+1	red siltstone in thin beds, upper contact sharp
c	+1	same as unit a
d	+1	same as unit b
e	9	< 1 meter thick beds of buff and red sandstone, grading upwards into red blocky siltstone
f	1.5	beds of red siltstone and sandstone with varying amounts of basalt breccia
Section B of Figure 7		
a	.5	greenish-red, slightly micaceous with small scale ripple-bedded siltstone
b	.05	gray, aphanitic, calcareous siltstone
c	.08	same as above with a thin unit of red siltstone between it and unit b
d	.25	red and green, fine bedded siltstone
e	.20	reddish green fine bedded siltstone
f	.05	gray indistinctly bedded very calcareous siltstone
g	.02	gray well bedded calcareous siltstone
h	.08	gray well bedded limestone laminae alternating with siltstone to form 5 mm thick couplets. *Semionotus* common
i	.06	gray aphanitic limestone
j	.05	gray graded beds (1010 mm) of calcareous siltstone
k	.05	similar to unit h, but couplets 2-3 mm. *Semionotus* common
l	.06	similar to above but more silty
m	.08	gray laminated siltstone with limestone laminae present occasionally
n	.46	mottled gray and red clayey siltstone with thin fossil roots. Palyniferous (W. B. Cornet, pers. comm.)
o	.03	gray coarse siltstone
p	.18	gray small scale cross-bedded coarse siltstone with numerous natural casts of reptile footprints on lower contact
q	.18	gray ripple-bedded fine siltstone with numerous reptile footprints
r	.31	gray ripple-bedded coarse siltstone grading into unit q. Reptile footprints common.
s	.08	same as p
t	.14	gray and reddish siltstone with numerous reptile footprints
u	.44	red and gray claystone
v	.05	gray and red siltstone with large dinosaur footprints
w	.13	gray and red siltstone with numerous reptile footprints

086

Type Section of the Towaco Formation
(measured from top down)
(see Figure 11)

Basal Hook Mountain Basalt and cycle A of Towaco Formation exposed in the "Dinosaur Tract" of the Essex County Park Commission adjacent to the "Nob Hill" condominium project, where cycle B and the upper part of cycle C were exposed prior to 1977 (Olsen, 1975). All these exposures were part of the Roseland Quarry, Roseland, New Jersey.

Unit letter from Figure 16	Thickness	Description
Hook Mountain Basalt. 1st flow	35.0	Tholeiitic Basalt. Massive at base, columnar jointed in middle, vesicular at top.
Towaco Formation Volcanoclastic bed		
a	.9	Brown, badly weathered palagonitic unit consisting of shards of altered glass in a matrix of brown ?radial natrolite when fresh.
Upper Cycle (A)		
b	.5	Light gray and lavender siltstone, locally laminated with small scale cross-bedding. May contain volcanoclastic component.
c	1.2	Dark lavender and maroon siltstone with small scale crossbedding. Small orange crystals (weathered) along fracture planes.
d	1.8	Deep red, hard siltstone grading into units above and below. Contains one fining-upwards cycle with reptile footprints common.
e	29.3	10 red fining-upwards cycles, each a mean of 2.9 m thick and composed of thick beds of red sandstone or coarse siltstone with prominent slip-off surfaces grading up into beds of ripple-bedded siltstone and blocky siltstone. Lowest cycle contains buff intraformational breccia with coprolites, reptile bone fragments, and fish scales. Lower cycles contain numerous calcareous lenticular concretions most common in coarse parts of cycles. Fine parts of middle cycles contain numerous small dolomitic concretions and deep mud cracks. Reptile footprints common in lower and upper cycles, as are root casts.
f	3.4	Gray and buff fining-upwards cycles consisting of a lower, cross-bedded sandstone grading up into lavender and gray siltstone. Reptile footprints and carbonized plants common.
g	1.1	Gray-green fine siltstone massive and indistinctly bedded. Small bits of carbonized stems and leafy twigs common. Palyniferous (Cornet, 1977).
h	.6	Dark to light gray, very fine and fine siltstone with massive to fine bedding and local load casts and ?gypsum crystal impressions. Good plant fragments including several conifer species, *Semionotus* scales and bones, and a single beetle elytron.
i	.4	Black, slickensided very fine siltstone with common chert nodules with a globular fabric.
j	.2	Black laminate. Black carbonaceous siltstone and white carbonate couplets .42 mm thick. Upper part of unit has several 5 mm thick graded, black siltstone layers. Grades into unit i.
k	.3	Light gray clayey siltstone, soft with black laminae becoming common upwards. Grades into unit j.
l	2.5	Gray fining-upward cycle composed of a lower cross-bedded sandstone containing numerous tree limbs, branches and roots grading upwards into a fine, well-bedded siltstone, locally ripple-bedded with numerous reptile footprints. Uppermost portion contains gray-green massive siltstone.
m	.9	Gray-buff, well bedded siltstone with dinosaur footprints and plant roots preserved both as carbonized impressions and natural casts.
Cycle B		
n	4.2	Red, thick fining-upward cycle. Lower part consists of thick beds of red sandstone with slip-off surfaces, local intraformational conglomerates and natural casts of large tree limbs or roots and a possible large reptile jaw. Middle part composed of 5 cm ± fine graded beds with very rare bone fragments and ?dinosaur teeth and exceptionally good reptile footprints. Plant fragments common and preserved as impressions or natural casts. Upper part is fine siltstone and plant remains present either as natural casts or carbonized compressions surrounded by gray-green halos. Grades upward into unit m.

Unit letter from Figure 16	Thickness	Description
All but the top of the following are no longer exposed.		
o	16.8	6. red fining-upwards cycles. Each cycle similar to unit n but a mean thickness of less than 1 meter. Middle 3 cycles contain numerous round dolomitic concretions and deep mudcracks in the fine portions. Reptile footprints common: plant remains (twigs and roots) present as impressions and natural casts.
p	5.2	2 or 3 gray fining-upwards cycles pinching out to the south where only one remains. Lower part of cycle consists of gray and buff cross-bedded sandstone grading upward into fine gray-blue or gray-green siltstone. Uppermost cycle composed of gray sandstones and red siltstones. Plant remains common as carbonized compressions. fine units palyniferous and reptile footprints common.
q	.8	Basal portion is a laminate composed of laminae of dark organic-rich siltstone alternating with light carbonate laminae forming couplets 0.4 mm thick. Upper part of laminate has 5 mm black graded beds. Upper part of unit consists of beds of graded sandstones and siltstones with minor intraformational conglomerate made up of the laminite. *Semionotus* abundantly preserved as articulated compressions in laminite and in three dimensions in the sandstones. Carbonized plant compressions common.
r	.2	Black indistinctly-bedded siltstone. Gradational with unit s.
s	4.9	Olive massive slurried and convoluted bedded coarse poorly sorted siltstones grading upwards into poorly bedded gray-blue siltstones with numerous clasts of unit t throughout. Some recumbent folds over a meter between limbs.
t	.5	Black laminite very similar to laminite of unit q but without *Semionotus*.
u	.6	Light gray or buff clayey siltstone grading into units t and v. Black laminae common upward.
v	3.0	Gray fining-upwards cycle composed of basal coarse. cross-bedded siltstone grading up into fine siltstone. Carbonized fragments of plants present.
w	1.0	Gray small-scale cross-bedded siltstone, grades downward into unit x.
Cycle C		
X	4.3	Red small-scale cross-bedded siltstone.

Table 6

Type section of the Boonton Formation

Top of section exposed just east of the dam for the Jersey City Reservoir in Boonton. New Jersey. Section measured from top down (see Figure 20).

Thickness (m)	Description
+1	Gray coarse to fine siltstone and sandstone (now covered)
+1	Gray laminite composed of laminae of gray siltstone alternating with laminae of carbonate forming couplets of a mean of 2.5 mm. Unit also contains coarse to fine graded siltstones 1 mm to 2.5 cm thick. Fossil fish of 4 genera (see Figure 15) present along with numerous carbonized plant compressions and conchostracans. This is the famous Boonton Fish Bed (unit now covered).
.5	Gray clayey siltstone with common carbonized plant compressions (mostly conifers). Unit palyniferous (Cornet. 1977).
1.2	Gray fining-upwards cycle made up of coarse to fine cross-bedded sandstone grading up into small-scale cross-bedded siltstone. Reptile footprints common.
15.7	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions and reptile footprints present.
3.4	Gray coarse siltstone grading up into fine gray siltstone. Carbonized plant compressions present. Unit palyniferous.
+5	Red sandstone and siltstone in indistinct fining-upwards cycles. Small-scale cross-bedding common. Dolomitic concretions present.
ca.20	covered

REFERENCE NO. 8

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: D. Cohen DATE: 10/31/89

FROM: A. Culmore COPIES:

SUBJECT: Clarification of telecon information - telecons attached

REFERENCE: Bergen County EPI PA Sites
Original filed in PA PM File 02-8910-05

1) Public Water Supply Systems -
a) Jersey City Water Dept. - Lyndhurst, Clifton
b) Passaic Valley Water Comm. - Nutley, No. Arlington, Clifton
c) Newark Water Dept. - Bellville
d) Hackensack Water Co. - Rutherford, E. Rutherford, Carlstadt, Moonachie, Wood-Ridge, Hasbrouck Heights, Teterboro, So. Hackensack, Hackensack, Teaneck, Little Ferry, Maywood, Bogota, Ridgefield Park, Ridgefield, Secaucus, Fairview

The above mentioned towns are supplied by surface water AC 10/30/89 ~~supply~~ supplies whose intakes ~~are~~ are not located in the migration pathway or are greater than 3 mi upstream of the site.

The well located at Lyndhurst High School is open to the residents of the town to fill their own jugs.
There are no reported domestic wells located in the communities noted above that are used for potable purposes except Teaneck, Bogota, Ridgefield Park and Hackensack.

090

(over)

(01)

Wallington, Lodi, Saddle Brook, Elmwood Park, Garfield, Fairlawn have wells used for public supply purposes. Many of these wells are closed due to contamination. Supplimentary water is purchased from the Passaic Water Valley Water Comm. and the Hackensack Water Co. in these areas.

A. [illegible]

p.2

NUS CORPORATION TELECON NC

CONTROL NO: 02-8816-18

DATE: 11/2/88

TIME: 0810

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN: Jim Foldo

OF: Bellville Water Dept.

PHONE: (201) 450-341

AND: A. Calmne (NU

DISCUSSION:

Re: Community Water Supply

From: Newark Water Dept.

surface water reservoirs > 3 mi.

7500 domestic connections

7500 x 3.8 = 28,500 ≈ pop. served

Knows of 3 domestic wells but not currently used. All on community H_2O supply. Appx. potential pop. 12

3 x 3.8 = 11.4

ACTION ITEMS:

092

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: File
DATE: 10/20/88
FROM: A. Culmone
COPIES:
SUBJECT: Avon Sanitary LF + Palazzi Bros.
REFERENCE: Personal Interview: Lyndhurst Health Officer, Peter Forte

Health Dept. has no records on either site. their records only date back to 1984. The State monitored the Landfill site.

Lyndhurst Water Dept. buys H_2O from J.C. Water Dept. May also soon purchase additional H_2O from Passaic Valley Water Comm.

There is a public well at Lyndhurst H.S. - operated by Lyndhurst Water Dept. A copy of the 1987 water analyses is attached.

There are other private wells in the area for domestic use. Lyndhurst Water Dept. has this info.

Will have the Fire Inspector contact me on Fri., 10/21 with any info regarding fires or hazardous conditions at these locations.

NUS CORPORATION TELECON N

CONTROL NO:	DATE:	TIME:
02-8810-18	11/3/88	11 [illegible]

DISTRIBUTION:

[illegible] Sanitary LF

BETWEEN:	OF:	PHONE:
Carol Donnelly	Kearny Water Dept.	(201)

AND:

A. Culmone

DISCUSSION:

Kearny - Water supply - part owner of gravity fed system reservoir in North Jersey District Water Supply - Wanaque Res. > 3mi

2 non potable wells ~~with~~ industrial use with back flow check valves
- West Hudson Hospital, 206 Bergen Ave, Kearny permit # 410, James Shaw Dir. Plant Operation
- Clear Cast Div of PPG. 450 Schuyler Ave. permit # 506, Larry S. Caso

4 surface water intakes non-potable industrial usage with back flow check values
- PSE+G, Hackensack Ave., Kearny permit # 798, Hackensack River

ACTION ITEMS:

Mr. Charles Manzenmaier
- River Terminal Development Co, 100 Central Ave. Kearny, Passaic River permit # 57 Frank Kobola

004

(over)

- Franklin Plastic's, 113 Passaic Ave., Kearny
Passaic River, permit # 48

- Monsanto Corp, Pennsylvania Ave., Kearny
Passaic River, permit # 286, Celso Balan (Tech. Serv. Super.)

Pop' ≈ 37,500
Services ≈ 7500

DEP - James Montgomery, Phys. Connection Program, Bureau Safe Drinking H_2O

NUS CORPORATION TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-8810-18	11/9/88	1135

DISTRIBUTION:

Avon Sanitary LF

BETWEEN:	OF:	PHONE:
Mike Fessler	Veritek Co.	(201) 492-8744

AND: A. Calmore (NUS)

DISCUSSION:

Re: Well at Clear Cast
(Veritek Co. - environmental consultant for Clear Cast)

Well ~~Dpts~~. depth. appx 200 ft.

Use - cooling water

Geology - unknown - bedrock
assumed to be Brunswick

ACTION ITEMS:

NUS CORPORATION TELECON

CONTROL NO:	DATE:	TIME:
02-8810-18	11/4/88	1100

DISTRIBUTION:

Avon Landfill

BETWEEN:	OF:	PHONE:
Bob Noe	No. Arlington Water Dept.	(201)

AND:

A. Culman

DISCUSSION:

Public Water Supply - Passaic Valley Water Comm.
- surface H_2O Reservoirs >3 mi.
- no municipal wells

Appx. population 18,000

Chas. Agel - H_2O Dept. Supt. will call back Mon. to give any additional info possibly needed.

ACTION ITEMS:

NUS CORPORATION TELECON NOTE

CONTROL NO:	DATE:	TIME:
02-8810-18	10/31/88	1455

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN:	OF:	PHONE:
Stu Palfreyman	Health Office Clifton	(201) 470-5758

AND: A. Culmore (NUS)

DISCUSSION:

Clifton community water supply is provided by the Passaic Valley Water Comm.

There are 3 potable wells in Clifton
1) Municipal well at 900 Clifton Ave.
2) Brookdale Beverage Corp. 955 Bloomfield Ave.
3) Public ~~Non~~ Community - Swepco Tube Corp. 1 Clifton Blvd.

The well at City Hall Campus - depth is 150'

Population of Clifton is appx 75,000

ACTION ITEMS: Contact No. for PVWC
Wendell Imhoffer
340-4300

NUS CORPORATION TELECON N[illegible]

CONTROL NO:	DATE:	TIME:
02-8810-18 NTC28I	10/27/88	1400

DISTRIBUTION:

Avon Sanitary Landfill

BETWEEN:	OF:	PHONE:
Wally Orrego	Lyndhurst H_2O Dept.	(201) 438-77

AND:

A. Culmone

DISCUSSION:

Depth of well - 153'

Depth at which well is screened - 145'

Is it bedrock - yes

90'-110' clay barrier

flow 1.5" - 200 gpm

back up well same general conditions

Kearny, North Arlington - Passaic Valley - , Nutley, Belleville

Rutherford - Hackensack and all towns to the north

Clifton - Jersey City H_2O Dept.

ACTION ITEMS:

NUS CORPORATION
SUPERFUND DIVISION

PROJECT NOTES

TO: File 02-8810-18 NJC2II

DATE: 10/25/88

FROM: A. Culmone

COPIES:

SUBJECT: Public Water Supply + Private Wells Town of Lyndhurst

REFERENCE: Avon Sanitary LF

Personal Interview of Helen Polito, Lyndhurst Water Dept.

Only 1 active well in town - Forest Ave. at the High School.

2nd well currently inactive on Cleveland Ave. but provides potential back-up supply.

All township residents currently on municipal water. No private wells are used.

Water is purchased from the Jersey City Water Dept.

~~Number of connections~~
Lyndhurst Pop. 20,000

NUS 443A 58 1182

NUS CORPORATION TELECON N

CONTROL NO:	DATE:	TIME:
02 8810-18	11/?/88	[illegible]

DISTRIBUTION:

Fran Sanitary LF

BETWEEN:	OF:	PHONE:
Water Plant Foreman	Nutley Public Supply Dept.	(201) 284-[illegible]

AND:

A. Gilmore

DISCUSSION:

Nutley - Passaic Valley Water Comm.
community supply
- surface reservoir > 3 mi
1 well in town with public access
on Board of Ed. property
depth - 300'
direction of flow in → E
Franklin Ave. + Kennedy (High School)
no connection to public H_2O supply
active
Town Pop. 29,000 ≈
domestic connections ≈ 9000 × 3.8 -
34,200 persons
Contradictory info

ACTION ITEMS:

REFERENCE NO. 9

SUBJECT TO REVISION

WATER WITHDRAWAL POINTS AND NJGS CASE INDEX SITES WITHIN 5.0 MILES OF:

LATITUDE 404731
LONGITUDE 740612

DRAFT

SCALE: 1:63,360
(1 Inch = 1 Mile)

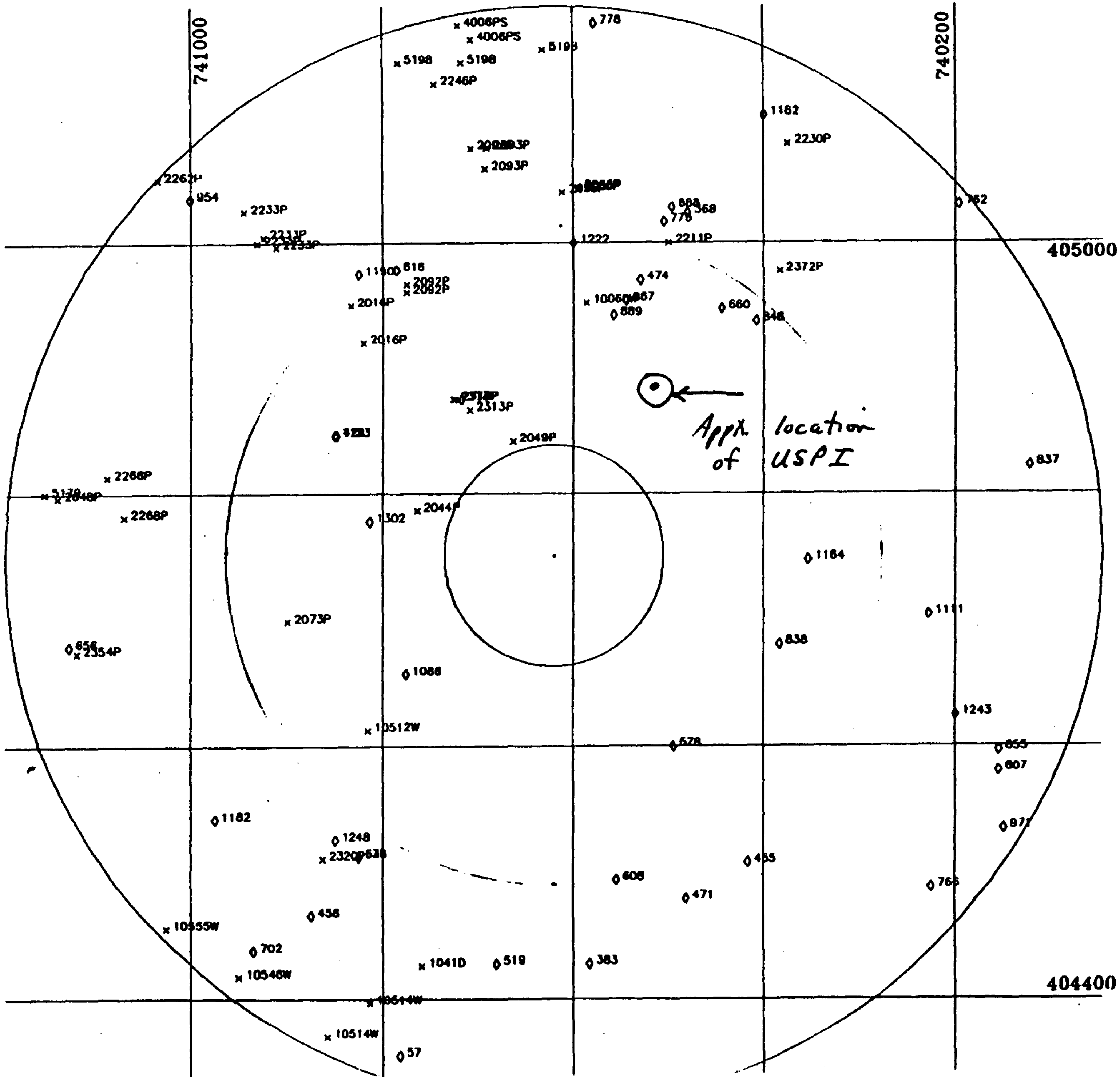
103

× WATER WITHDRAWAL POINTS
◊ NJGS CASE INDEX SITES
1 MILE AND 5 MILE RADII INDICATED

NJGS CASE INDEX DATA RETRIEVED FROM:
NEW JERSEY GEOLOGICAL SURVEY
ON 12/22/87

PLOT PRODUCED BY:
NJDEP
DIVISION OF WATER RESOURCES
BUREAU OF WATER ALLOCATION
CN-029
TRENTON, NJ 08625

DATE: 10/18/88



NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEO1	GEO2	CAPACITY
5179	BLOOMFIELD TOWN	2604763	1	404800	741130	T	4.7	13	02	380	GTRB		330
2048P	NATIONAL STARCH & CHEMICAL	2604314	1	404758	741122	T	4.6	13	02	410	GTRB		200
2354P	ESSEX COUNTY DEPT. OF PARKS	2604894	2	404645	741110	T	4.4	13	14	450	GTRB		180
2268P	FOREST HILL FIELD CLUB	POND		404808	741051	F	4.1	13	02	14	SP		1200
2268P	FOREST HILL FIELD CLUB	2604258	1	404749	741041	S	3.9	13	02	238	GTRB		60
2262P	UPPER MONTCLAIR COUNTRY CLUB	2604825	3	405030	741020	T	5.0	31	02	300	GTRB		60
10555W	NEW JERSEY BELL TEELEPHONE	2603173	1	404433	741015		4.9	13	14	215	GTRB		80
10546W	PUBLIC SERVICE ELECTRIC & GAS	4600103	1	404410	740930	F	4.8	17	04	216	GTRB		250
2233P	HOFFMANN-LAROCHE INC.	4600156	32	405015	740927	F	4.2	31	02	650	GTRB		260
2233P	HOFFMANN-LAROCHE INC.	4600155	20	405000	740919	F	3.9	13	16	402	GTRB		100
2233P	HOFFMANN-LAROCHE INC.	4600157	33	405003	740915	F	3.9	31	02		GTRB		165
2233P	HOFFMANN-LAROCHE INC.	4600158	37	404958	740907	F	3.8	31	02	720	GTRB		300
2073P	INTERNATIONAL MINERALS & CHEM.	4600092	1	404700	740900	T	2.5	13	01	352	GTRB		100
2073P	INTERNATIONAL MINERALS & CHEM.	4600093	2	404700	740900	T	2.5	13	01	400	GTRB		150
2073P	INTERNATIONAL MINERALS & CHEM.	2605113	3	404700	740900	T	2.5	13	01	400	GTRB		150
2320P	HONEYCOMB PLASTICS CORP.	4600182	1	404506	740838	S	3.5	17	07	500	GTRB		210
2320P	HONEYCOMB PLASTICS CORP.	2602384	2	404506	740838	S	3.5	17	07	700	GTRB		500
10514W	RONSON METALS CORP.	2604993	3	404342	740835	T	4.9	13	14	165			100
2016P	ITT AVIONICS DIVISION	2601834	1	404930	740820	T	2.9	13	16	500	GTRB		150
2016P	ITT AVIONICS DIVISION	2601835	2	404930	740820		2.9	13	16	450	GTRB		150
2016P	ITT AVIONICS DIVISION	2601905	3	404930	740820		2.9	13	16	500	GTRB		150
2016P	ITT AVIONICS DIVISION	2604692	4/SEALED	404912	740812		2.6	13	16	500	GTRB		200
10512W	V.H. SWENSON CO., INC.	2602717	1	404608	740809	F	2.3	17	07	400	GTRB		150
10514W	RONSON METALS CORP.	2603408	1	404358	740808	T	4.4	13	14	300	GTRB		150
5198	WALLINGTON BOROUGH	4600075	8	405125	740750		4.7	03	65	503	GTRB		80
5198	WALLINGTON BOROUGH	4600074	5	405125	740750		4.7	03	65	506	GTRB		150
2092P	GIVAUDAN CORPORATION	4600006	6	404936	740745	F	2.7	31	02	297	GTRB		235
2092P	GIVAUDAN CORPORATION	4600007	7	404940	740745	F	2.8	31	02	250	GTRB		110
2044P	GRAND UNION CO.	4600002		404752	740738	S	1.3	03	39	300	GTRB		80
1041D	AMERICAN REF-FUEL COMPANY	175 WELL	POINTS	404415	740735	F	3.9	13	14	35	GUSD		250
2246P	FARMLAND DAIRIES INC.	2604169	1	405115	740727	U	4.4	03	65	300	GTRB		200
2246P	FARMLAND DAIRIES INC.	2304250	2	405115	740727	U	4.4	03	65	300	GTRB		185
2313P	PENCO OF LYNDHURST INC.	4600173	2	404845	740715		1.7	03	32	313	GTRB		185
2313P	PENCO OF LYNDHURST INC.	2601699	3	404845	740715	F	1.7	03	32	410	GTRB		150
2313P	PENCO OF LYNDHURST INC.	4600172	1	404845	740714		1.7	03	32	267	GTRB		110
4006PS	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	OKONITE CO	405143	740712	T	4.9	31	07		SP		
5198	WALLINGTON BOROUGH	2603027	LESTER ST	405125	740710		4.6	03	65	400	GTRB		130
2313P	PENCO OF LYNDHURST INC.	2603804	4	404840	740705	F	1.5	03	32	352	GTRB		185
2093P	ORVAL KENT FOOD COMPANY, INC.	2604317	1	405045	740704	F	3.8	03	12	580	GTRB		150
4006PS	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	TUCK IND.	405136	740704	T	4.7	31	07		SP		
2093P	ORVAL KENT FOOD COMPANY, INC.	2604382	3	405035	740655	T	3.6	03	12	470	GTRB		430
2093P	ORVAL KENT FOOD COMPANY, INC.	2604341	2	405045	740654	S	3.8	03	12	300	GTRB		150
2049P	SIKA CORPORATION	2604036	1	404825	740638		1.1	03	32	302	GTRB		200
5198	WALLINGTON BOROUGH	2603933	DUL	405131	740619		4.6	03	65	400	GTRB		140
2055P	GANES CHEMICAL, INC.	2600005	4	405024	740607	F	3.3	03	05	526	GTRB		80
2055P	GANES CHEMICAL, INC.	4600080	2	405026	740557	F	3.4	03	05	490	GTRB		200
2055P	GANES CHEMICAL, INC.	2604277	5	405025	740557	F	3.3	03	05	430	GTRB		30
10060W	CARLSTADT-E. RUTHERFORD B.O.E	2603920	1	404931	740552	F	2.3	03	12	225	GTRB		125
2211P	HENKEL PROCESS CHEMICALS, INC.	4600125	1	405000	740500		3.0	03	05	170	GUSD		600
2372P	YOO-HOO CHOCOLATE BEV. CORP.	2602067	1	404946	740350		3.3	03	05	303	GTRB		90
2372P	YOO-HOO CHOCOLATE BEV. CORP.	2602933	2	404946	740350		3.3	03	05	393	GTRB		50
2372P	YOO-HOO CHOCOLATE BEV. CORP.	2603053	3	404946	740350		3.3	03	05	378	GTRB		55
2230P	HOFFMAN LAROCHE INC.	2406268	1	405047	740345	[illegible]	4.3	41	03	140	GO		700

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEO1	GEO2	CAPACITY
10060W	CARLSTADT-E. RUTHERFURD B.O.E	2603920	1	404931	740552	F	2.3	03	12	225	GTRB		125
1041D	AMERICAN REF-FUEL COMPANY	175 WELL	POINTS	404415	740735	F	3.9	13	14	35	GOSD		250
10512W	V.H. SWENSON CO., INC.	2602717	1	404608	740809	F	2.3	17	07	400	GTRB		150
10514W	RONSON METALS CORP.	2603408	1	404358	740808	T	4.4	13	14	300	GTRB		150
	RONSON METALS CORP.	2604993	3	404342	740835	T	4.9	13	14	165			100
10546W	PUBLIC SERVICE ELECTRIC & GAS	4600103	1	404410	740930	F	4.8	17	04	216	GTRB		250
10555W	NEW JERSEY BELL TEELEPHONE	2603173	1	404433	741015		4.9	13	14	215	GTRB		80
2016P	ITT AVIONICS DIVISION	2601834	1	404930	740820	T	2.9	13	16	500	GTRB		150
	ITT AVIONICS DIVISION	2601835	2	404930	740820		2.9	13	16	450	GTRB		150
	ITT AVIONICS DIVISION	2601905	3	404930	740820		2.9	13	16	500	GTRB		150
	ITT AVIONICS DIVISION	2604692	4/SEALED	404912	740812		2.6	13	16	500	GTRB		200
2044P	GRAND UNION CO.	4600002		404752	740738	S	1.3	03	39	300	GTRB		80
2048P	NATIONAL STARCH & CHEMICAL	2604314	1	404758	741122	T	4.6	13	02	410	GTRB		200
2049P	SIKA CORPORATION	2604036	1	404825	740638		1.1	03	32	302	GTRB		220
2055P	GANES CHEMICAL, INC.	4600080	2	405026	740557	F	3.4	03	05	490	GTRB		200
	GANES CHEMICAL, INC.	2600005	4	405024	740607	F	3.3	03	05	526	GTRB		80
	GANES CHEMICAL, INC.	2604277	5	405025	740557	F	3.3	03	05	430	GTRB		30
2073P	INTERNATIONAL MINERALS & CHEM.	4600092	1	404700	740900	T	2.5	13	01	352	GTRB		100
	INTERNATIONAL MINERALS & CHEM.	4600093	2	404700	740900	T	2.5	13	01	400	GTRB		150
	INTERNATIONAL MINERALS & CHEM.	2605113	3	404700	740900	T	2.5	13	01	400	GTRB		150
2092P	GIVAUDAN CORPORATION	4600006	6	404936	740745	F	2.7	31	02	297	GTRB		235
	GIVAUDAN CORPORATION	4600007	7	404940	740745	F	2.8	31	02	250	GTRB		110
2093P	ORVAL KENT FOOD COMPANY, INC.	2604317	1	405045	740704	F	3.8	03	12	580	GTRB		150
	ORVAL KENT FOOD COMPANY, INC.	2604341	2	405045	740654	S	3.8	03	12	300	GTRB		150
	ORVAL KENT FOOD COMPANY, INC.	2604382	3	405035	740655	T	3.6	03	12	470	GTRB		430
2211P	HENKEL PROCESS CHEMICALS, INC.	4600125	1	405000	740500		3.0	03	05	170	GOSD		600
2230P	HOFFMAN LAROCHE INC.	2406268	1	405047	740345	T	4.3	41	03	140	GD		700
2233P	HOFFMANN-LAROCHE INC.	4600155	20	405000	740919	F	3.9	13	16	402	GTRB		100
	HOFFMANN-LAROCHE INC.	4600156	32	405015	740927	F	4.2	31	02	650	GTRB		260
	HOFFMANN-LAROCHE INC.	4600157	33	405003	740915	F	3.9	31	02		GTRB		165
	HOFFMANN-LAROCHE INC.	4600158	37	404958	740907	F	3.8	31	02	720	GTRB		300
2246P	FARMLAND DAIRIES INC.	2604169	1	405115	740727	U	4.4	03	65	300	GTRB		200
	FARMLAND DAIRIES INC.	2304250	2	405115	740727	U	4.4	03	65	300	GTRB		185
2262P	UPPER MONTCLAIR COUNTRY CLUB	2604825	3	405030	741020	T	5.0	31	02	300	GTRB		60
2268P	FOREST HILL FIELD CLUB	2604258	1	404749	741041	S	3.9	13	02	238	GTRB		60
	FOREST HILL FIELD CLUB	POND		404808	741051	F	4.1	13	02	14	SP		1200
2313P	PENCO OF LYNDHURST INC.	4600172	1	404845	740714		1.7	03	32	267	GTRB		110
	PENCO OF LYNDHURST INC.	4600173	2	404845	740715		1.7	03	32	313	GTRB		185
	PENCO OF LYNDHURST INC.	2601699	3	404845	740715	F	1.7	03	32	410	GTRB		150
	PENCO OF LYNDHURST INC.	2603804	4	404840	740705	F	1.5	03	32	352	GTRB		185
2320P	HONEYCOMB PLASTICS CORP.	4600182	1	404506	740838	S	3.5	17	07	500	GTRB		210
	HONEYCOMB PLASTICS CORP.	2602384	2	404506	740838	S	3.5	17	07	700	GTRB		500
2354P	ESSEX COUNTY DEPT. OF PARKS	2604894	2	404645	741110	T	4.4	13	14	450	GTRB		180
2372P	YOO-HOO CHOCOLATE BEV. CORP.	2602067	1	404946	740350		3.3	03	05	303	GTRB		90
	YOO-HOO CHOCOLATE BEV. CORP.	2602933	2	404946	740350		3.3	03	05	393	GTRB		50
	YOO-HOO CHOCOLATE BEV. CORP.	2603053	3	404946	740350		3.3	03	05	378	GTRB		55
4006PS	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	OKONITE CO	405143	740712	T	4.9	31	07		SP		
	DUNDEE WATER POWER & LAND CO.	DUNDEE CAN	TUCK IND.	405136	740704	T	4.7	31	07		SP		
5179	BLOOMFIELD TOWN	2604763	1	404800	741130	T	4.7	13	02	380	GTRB		330
5198	WALLINGTON BOROUGH	2603933	DU.	405131	740619		4.6	03	65	400	GTRB		140
	WALLINGTON BOROUGH	2603027	LESTER ST	405125	740710		4.6	03	65	400	GTRB		130
	WALLINGTON BOROUGH	4600075	8	405125	740750		4.7	03	65	503	GTRB		80
	WALLINGTON BOROUGH	4600074	5	405125	740750		4.7	03	[illegible]	[illegible]	[illegible]		[illegible]

REFERENCE NO. 10

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-32

Site Address: 343 Murry Hill Parkway
Street, Box, etc.

E. Rutherford
Town

Bergen
County

NJ
State

NUS Personnel:	Name	Discipline
	A. Colmore	Env. Scientist
	J. Harrison	Technician
	J. Reickhoff	Biologist

Weather Conditions (clear, cloudy, rain, snow, etc.):

clear, 48°F at 10/26/89, early morning haze

Estimated wind direction and wind speed: 0-5 mph SW

Estimated temperature: 48°F

Signature: Anthony F. Colmore Jr. Date: 10/26/89

Countersigned: [signature] Date: 10/26/89

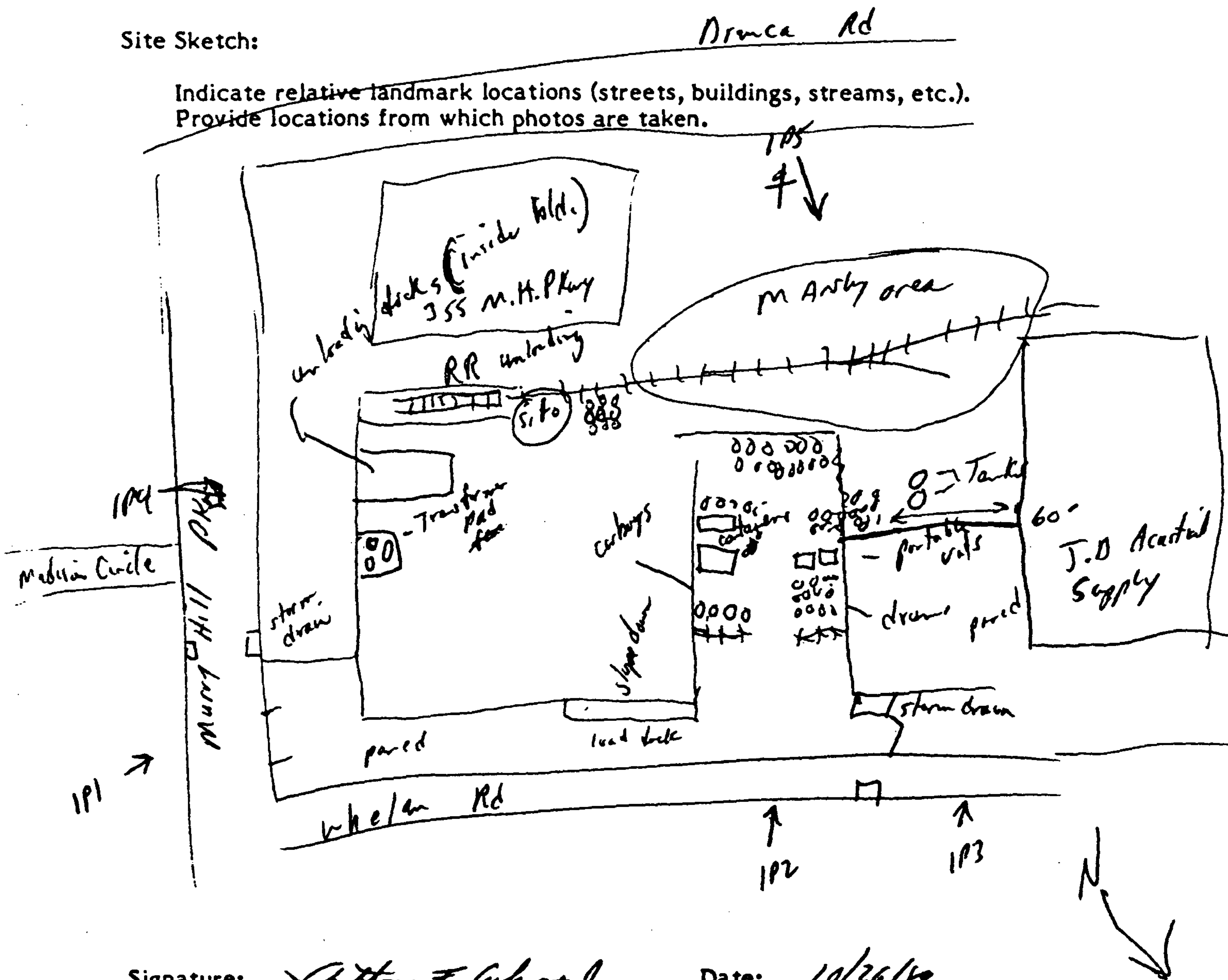
PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-32

Site Sketch: Indicate relative landmark locations (streets, buildings, streams, etc.). Provide locations from which photos are taken.



Signature: [signature] Date: 10/26/89

Countersigned: [signature] Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-32

Notes (Periodically indicate time of entries in military time):

Arrive at site 0820, Grounds facing public area well Kept. Site Active. Facility slope less than 3%
0830 Asphalt pavement in drum storage area fence with open gate, many drums stacked 4 tiers, 250-300 drums
8 carboys no dykes or berms unknown if drums have covers. No signs of stressed biota.
0835 Drainage apparently flows to marshland appx 300' to west along Whelan Rd.
0840 Observed transfer of residue area for RR cars and tankers on SE corner of Bld.
0845 Went down Branica Rd. only could see tanks at west side of property
0850 Left site.

Signature: [signature] Date: 10/26/89
Countersignature: [signature] Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-~~89~~ 32 AC 10/26/89

Notes (Cont'd):

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony F. Cuban Jr. Date: 10/26/89

Countersignature: Date: 10/26/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 10/26/89

Site Name: United States Printing Ink TDD: 02-8910-32

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
1P1	10/26/89	0822	J. Harrison	view from Murray Hill Pkwy looking westerly at front of bld
1P2	10/26/89	0831	J. Harrison	view of drum storage area from Whelan Rd
1P3	10/26/89	0833	J. Harrison	view of of additional tanks and drums from Whelan Rd
1P4	10/26/89	0839	J. Harrison	View SE corner of bld. loading docks & Transformer & RR
1P5	10/26/89	0849	J. Harrison	view from Branca Rd of tanks at rear of bld.

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: [signature] Date: 10/26/89

Countersignature: [signature] Date: 10/26/89

UW05
02-8910-

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: United States Printing Ink TDD: 02-8910-32

Site Address: 343 Murry Hill Pkwy
Street, Box, etc.

E. Rutherford
Town

Bergen
County

NJ
State

NUS Personnel: Name	Discipline
A. Calmore	Env. Scientist
J. Rieckhoff	Env. Scientist
B. Yeager	Field Tech.

Weather Conditions (clear, cloudy, rain, snow, etc.):

Clear approx 20°F winds SW 5-10mph

Estimated wind direction and wind speed: SW 5-10mph

Estimated temperature: 20°F

Signature: Anthony F. Calmore Jr. Date: 12/15/89

Countersigned: John D Rieckhoff Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: U.S. Printing Ink Co. TDD: 02 8910-32

Site Sketch:

Indicate relative landmark locations (streets, buildings, streams, etc.).
Provide locations from which photos are taken.

See recon 10/26/89

Signature: Anthony F. Colamore Jr. Date: 12/15/89

Countersigned: John R. Reithoff Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: U.S. Printing Ink Co. TDD: 02-8910-32

Notes (Periodically indicate time of entries in military time):

At site 0754

Went to site to retake photos since photos on the original recon did not come out

Left site 0806

Signature: [signature] Date: 12/18/89
Countersignature: [signature] Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: U.S. Printing Ink TDD: 02-8910-32

Notes (Cont'd):

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony T. Calvone Jr. Date: 12/15/89

Countersignature: [signature] Date: 12/15/89

PRELIMINARY ASSESSMENT

INFORMATION REPORTING FORM

Date: 12/15/89

Site Name: U.S. Printing Ink TDD: 02-8910-32

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
1P10	12/15/89	0755	A. Calmon	View from Murray Hill Pkwy looking westerly at front of Bld
1P11	12/15/89	0757	A Calmon	View of drum storage area from Whelan Rd
1P12	12/15/89	0759	A Calmon	View of additional tank area and drums from Whelan Rd
1P13	12/15/89	0801	A Calmon	View of tanks at rear of bldd. from Branca Rd
1P14	12/15/89	08~~0~~3	A. Calmon	View of S side of facility from Branca Rd behind 775 MH Pkwy
1P15	12/15/89	0805	A Calmon	loading docks and transformer & RR unloading SE corner of Bld.

Note picture locations of P4 & 5 switched sequence from original recon for P 13 & P15

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Anthony J. Calmon Jr. Date: 12/15/89

Countersignature: [signature] Date: 12/15/89

REFERENCE NO. 12

AWRA Symposium on

COASTAL WATER RESOURCES

PROCEEDINGS

Coastal Water Resources

AWRA

118

Wilmington, North Carolina

TRENDS IN THE WATER QUALITY OF AN URBAN ESTUARY: HACKENSACK MEADOWLANDS, NEW JERSEY

Christine Cheng, Edward Konsevick[1]

ABSTRACT: The Hackensack Meadowlands Development Commission (HMDC), a New Jersey state planning agency, has been conducting a summer water quality program since 1971. Sampling sites on the tidal portion of the Hackensack River and its tributaries have been monitored for thirteen parameters. The data generated has allowed the HMDC to assess trends in a perturbed urban estuary over time. Parametric and non-parametric statistical analysis reveal that the system maintains the capacity to buffer stress. Comparing our results to precipitation allowed us to measure to what extent natural cycles influence water quality.
(KEY TERMS: Estuary; water quality; trends; parametric and non-parametric statistical analysis.)

INTRODUCTION

The Hackensack Meadowlands District encompasses almost 20,000 acres of tidal marshes and upland less than six miles west of Midtown Manhattan. Neglected and relatively undeveloped, it increased in value as surrounding land succumbed to haphazard growth. Recent uses have ranged from futile attempts at tide control, to the siting of power generating, chemical processing, metal finishing, and municipal water treatment facilities along the banks of the river and its tributaries. The area also serves as a repository for solid waste, and is criss-crossed by an extensive urban transportation network.

Enabling legislation in 1969 established a development commission whose mandate included balancing development with ecological considerations. The collection of water quality information commenced almost immediately, documenting the extent of past abuse. A continuation of this program allows one to trace the effect of concerted efforts on the part of regulatory agencies on a perturbed urban estuary. Previous reports include, "Water Quality in a Disordered Ecosystem (HMDC, 1970)," and "Water Quality in a Recovering Ecosystem (HMDC, 1976)." This report will examine the data generated from 1978 to 1987, relying on statistical analysis in order to depict trends over this period.

Study Area

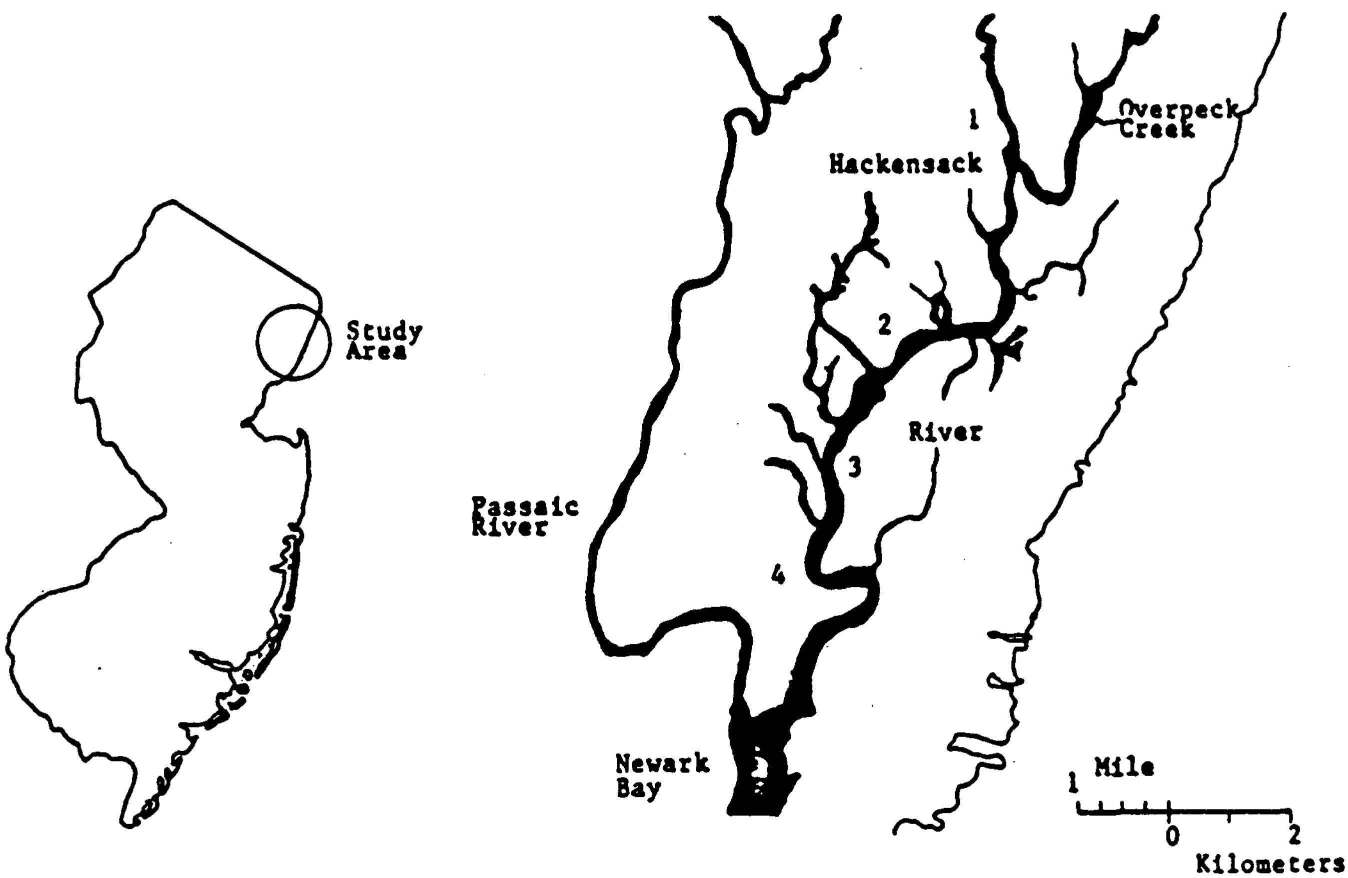
Situated within the Piedmont physiographic province in Northeastern New Jersey, the tidal portion of the Hackensack River drains an area of 93 square miles over a reach of 22 miles before its confluence with the Passaic River at Newark Bay. Approximately one third of this area falls within the Hackensack Meadowlands Land Use Control District,

[1] Respectively, Water Quality Specialist and Supervisor of Laboratory Operations and Research, Hackensack Meadowlands Development Commission, Two DeKorte Park Plaza, Lyndhurst, New Jersey 07071.

which includes over 6,000 acres of wetlands. The vegetation and tidal regime are consistent with a mid-Atlantic saltmarsh, containing mudflats, halophyte dominant marshes, salinity ranging from 0-15 ppt., and semi-dirunal tides in the main watercourse.

Suszkowski (1978) estimated freshwater flow to Newark Bay at the mouth of the Hackensack at 9.2 m^3/sec, 40 percent from wastewater discharges. Another estimate (HMDC, 1976), places the relative contribution of wastewater ten percent lower, the balance made up of water released from an upstream reservoir (20%) and precipitation (50%). The New Jersey Department of Environmental Protection monitors 7 municipal treatment facilities among the 50 discharge permittees in this District. The largest treatment plant is situated directly on the river at river mile 12.7. Its contribution is 2.8 m^3/sec of secondary treatment effluent. Two power generating stations utilize over a billion gallons a day as cooling water. Yet the river classification allows secondary contact recreation and the maintenance and propogation of natural biota. An active boating, trapping and hunting community exists, and it is not unusual to encounter the harvesting of killifish to be used elsewhere as bait.

Map 1: Study Area - Hackensack Meadowlands



The four sampling sites yielding data for this report cover ten miles of the river. Three of the stations are spaced at two mile intervals starting three miles north of the mouth. The last station is thirteen river miles from Newark Bay, well within the tidal reach of the river (Map 1). The depth of the channel at mean low water ranges from 16 to

REFERENCE NO. 13

Newark

N. J.—N. Y.—PA.

1:250 000-scale map of

Atlantic Coast Ecological Inventory

BIRDS (401-600)

SHOREBIRDS (401-430)

401 Shorebirds
402 Terns
403 Gulls
404 Forster's tern
405 Arctic tern
406 Least tern (S)
407 Roseate tern (S)
408 Common tern
409 Great black-backed gull
410 Herring gull
411 Laughing gull
412 Black skimmer (S)
413 Turnstones
414 Plovers
415 Piping plover
416 American oystercatcher (S)

WADING BIRDS (431-460)

431 Wading birds
432 Herons
433 Egrets
434 Rails
435 Ibises
436 Bitterns
437 Great blue heron (S)
438 Wood ibis (S)
439 Anhinga
440 Little blue heron (S)
441 Yellow-crowned night heron (S)
442 Black-crowned night heron
443 Florida sandhill crane (S)
444 Louisiana heron (S)
445 Limpkin (S)
446 Roseate spoonbill (S)
447 Snowy egret (S)
448 Magnificent frigate-bird (S)
449 Reddish egret (S)
450 Clapper rail
451 King rail
452 Virginia rail
453 Sora rail

Produced by
U. S. FISH AND WILDLIFE SERVICE
1980

Produced by U. S. Fish and Wildlife Service

Base map prepared by U. S. Geological Survey 1969

Atlantic coast ecological inventory compiled in 1980 by Fish and Wildlife Service from data furnished by Federal agencies, State agencies, and other sources. Map scale limitation precludes the portrayal of all available information on species occurrence and distribution. A detailed text—Atlantic Coast Ecological Inventory—is available from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402

LEGEND

POPULATED PLACES
Over 500 000 BOSTON
100 000 to 500 000 RICHMOND
25 000 to 100 000 EVANSTON
5 000 to 25 000
1 000 to 5 000
Less than 1 000

ROADS
Primary, all weather, hard surface
Secondary, all weather, hard surface
Light duty, all weather, improved surface
Fair or dry weather, unimproved surface
Trail
Interchange

122


NEWFOUNDLAND 5 MI.
WANAQUE 2 MI.
8 MI. TO U.S. 202
2 100 000 FEET (N.J.)
3 000 000 FEET (PA NORTH)
74°00'
41°00'
700 000 FEET (N.J.)
Kinnelon
Splitrock Reservoir
Butler
Pompton Plains
Pompton Lakes
Pines Lake
Midland Park
RIDGEWOOD
Westwood
Emerson
Oradell
Hawthorne
Glen Rock
Dumont
Hibernia
Taylortown
Lincoln Park
WAYNE
PATERSON
FAIR LAWN
BERGENFIELD
Oradell
White Meadow Lake
Towaco
Mountain Lakes
Boonton
Totowa
HACKENSACK
Denville
Lake Hiawatha
Fairfield
Little Falls
LODI
GARFIELD
TEANECK
Boonton Res
Caldwell-Wright
CLIFTON
Parsippany
Caldwell
PASSAIC
Little Ferry
Shongum Lake
MONTCLAIR
Morris Plains
Whippany
Cedar Knolls
Verona
Glen Ridge
NUTLEY
Rutherford
Morristown
BLOOMFIELD
BELLEVILLE
EDISON NAT HIST SITE
LIVINGSTON
Florham Park
WEST ORANGE
EAST ORANGE
Madison
ORANGE
KEARNY
UNION CITY
New Vernon
HOBOKEN
Green Village
Chatham
Maplewood
NEWARK
STATUE OF LIBERTY NATIONAL MONUMENT
Summit
IRVINGTON
New Providence
JERSEY CITY
MORRIS CO
UNION CO
ESSEX CO
UNION
Lookout Tower
Liberty Island
Berkeley Heights
BAYONNE
UPPER NEW YORK BAY
Stirling
Scotch Plains
CRANFORD
ELIZABETH
Roselle
Garwood
Watchung
WESTFIELD
LINDEN
New Brighton
Fanwood
NEW YORK
North Plainfield
PLAINFIELD
RAHWAY
UNION CO
MIDDLESEX CO
Dunellen
STATEN ISLAND
New Dorp
Iselin
Carteret
Hoffman Island
Middlesex
Woodbridge
GATEWAY NATIONAL RECREATION AREA
Great Kills
Great Kills Harbor
LOWER NEW YORK BAY
Metuchen
NEW BRUNSWICK
Highland Park
NEW YORK
NEW JERSEY
RICHMOND CO
GATEWAY NATIONAL RECREATION AREA
South Amboy
RARITAN BAY
SAYREVILLE
SANDY
QUEENS CO
Swinburne Island
Sea Gate
Coney I
110g, 111g,
118g, 115g, 130g,
128g, 129g, 151h
403h
129df,
138df, 147df,
160df, 173df, 177df
402d, 403e,
531e, 551g
402h, 403h
506h
406h
431h
454d
432h
453
452
451
450
449
448
45'
30'

REFERENCE NO. 14

Surface Water Classifications

Surface Water Quality Standards
N.J.A.C. 7:9-4

Index D-
Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

July 1985

State of New Jersey Department of Environmental Protection/Division of Water Resources

INDEX D - Surface Water Classifications of the Passaic, Hackensack and N.Y. Harbor Complex Basin

ARTHUR KILL	
(Perth Amboy) - The Kill and its saline New Jersey tributaries between the Outerbridge Crossing and a line connecting Ferry Pt., Perth Amboy to Wards Pt., Staten Island, N.Y.	SE2
(Elizabeth) - From an east-west line connecting Elizabethport with Bergen Pt., Bayonne to the Outerbridge Crossing	SE3
(Woodbridge) - All freshwater tributaries	FW2-NT
BEAR SWAMP BROOK (Mahwah) - Entire length	FW2-TP(C1)
BEAR SWAMP LAKE (Ringwood)	FW2-NT(C1)
BEAVER BROOK (Meriden) - Entire length	FW2-NT
BELCHER CREEK (W. Milford) - Entire length	FW2-NT
BERRYS CREEK (Secaucus) - Entire length	FW2-NT/SE2
BLACK BROOK	
(Meyersville) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Segment and tributaries within the Great Swamp National Wildlife Refuge	FW2-NT(C1)
BLUE MINE BROOK	
(Wanaque) - Entire length, except segment described below	FW2-TM
(Norvin Green State Forest) - That portion of the stream and any tributaries within Norvin Green State Forest	FW2-TM(C1)
BRUSHWOOD POND (Ringwood)	FW2-NT(C1)
BUCKABEAR POND (Newfoundland) - Pond, its tributaries and connecting stream to Clinton Reservoir	FW2-NT(C1)
CANISTEAR RESERVOIR (Vernon)	FW2-TM
CANISTEAR RESERVOIR TRIBUTARY (Vernon) - The southern branch of the eastern tributary to the Reservoir	FW1
CANOE BROOK (Chatham) - Entire length	FW2-NT
CEDAR POND (Clinton) - Pond and all tributaries	FW1
CHARLOTTEBURG RESERVOIR (Charlotteburg)	FW2-TM
CHERRY RIDGE BROOK	
(Vernon) - Entire length, except segments described below	FW2-NT
(Canistear) - Brook and tributaries upstream of Canistear Reservoir located entirely within the boundaries of Wawayanda State Park and the Newark Watershed lands	FW1
CLINTON BROOK	
(Mossmans Brook) (W. Milford) - Source to, but not including, Clinton Reservoir	FW2-NT(C1)
(Newfoundland) - Clinton Reservoir dam to Pequannock River	FW2-TP(C1)
CLINTON RESERVOIR (W. Milford)	FW2-TM(C1)
CLOVE BROOK - See STAG BROOK	

(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Primary and secondary contact recreation;

3. Industrial and agricultural water supply;

4. Public potable water supply after such treatment as required by law or regulation; and

5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Maintenance, migration and propagation of the natural and established biota;

3. Primary and secondary contact recreation; and

4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Migration of diadromous fish;

3. Maintenance of wildlife;

4. Secondary contact recreation; and

5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;

2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;

4. Maintenance of wildlife; and

5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

127

REFERENCE NO. 15

STATE OF NEW JERSEY
NEW JERSEY ADMINISTRATIVE CODE

Title 7. Department of Environmental Protection

Office of the Commissioner
Division of Parks and Forestry
Division of Marine Services
Division of Water Resources
Division of Fish, Game and Wildlife
Division of Waste Management
Division of Environmental Quality
Office of Green Acres and Outdoor Recreation
Delaware and Raritan Canal Commission
Pinelands Commission

Published and Distributed By
OFFICE OF ADMINISTRATIVE LAW
CN 301
Trenton, New Jersey 08625

TRANSMITTAL No. 1988-5 Supp. 5-16-88

TITLE 7

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUBTITLE D. DIVISION OF WATER RESOURCES

(d) The Department shall issue public notice to all interested parties (including affected municipalities and dischargers) and shall hold public hearing(s) as part of any reclassification proceeding.

(e) A reclassification for more restrictive uses shall be made whenever:

1. It is demonstrated to the satisfaction of the Department that there are existing uses of the specific segment that are not included in the designated uses; or

2. Where a reclassification for less restrictive uses has been granted pursuant to N.J.A.C. 7:9-4.10, the bases for that reclassification no longer exist; or

3. It is demonstrated to the satisfaction of the Department that any uses in Section 101(a)(2) of the Federal Clean Water Act, protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, which are not included in the designated uses listed in this subchapter are attainable.

(f) A reclassification for more restrictive uses may be made when:

1. It is demonstrated to the satisfaction of the Department that the waters should be set aside to represent the natural aquatic environment and its associated biota; or

2. It is demonstrated to the satisfaction of the Department that a more restrictive use is necessary to protect a unique ecological system or threatened/endangered species.

(g) In those cases in which a thermal discharge is involved, the procedures for reclassifying segments for more restrictive uses shall be consistent with section 316 of the Federal Clean Water Act.

7:9-4.12 Designated uses of FW1, PL, FW2, SE1, SE2, SE3, and SC waters

(a) In all FW1 waters the designated uses are:

1. Set aside for posterity to represent the natural aquatic environment and its associated biota;

2. Primary and secondary contact recreation;

3. Maintenance, migration and propagation of the natural and established aquatic biota; and

4. Any other reasonable uses.

(b) In all PL waters the designated uses are:

1. Cranberry bog water supply and other agricultural uses;

2. Maintenance, migration and propagation of the natural and established biota indigenous to this unique ecological system;

3. Public potable water supply after such treatment as required by law or regulations;

4. Primary and secondary contact recreation; and

5. Any other reasonable uses.

(c) In all FW2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Primary and secondary contact recreation;

3. Industrial and agricultural water supply;

4. Public potable water supply after such treatment as required by law or regulation; and

5. Any other reasonable uses.

(d) In all SE1 waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Maintenance, migration and propagation of the natural and established biota;

3. Primary and secondary contact recreation; and

4. Any other reasonable uses.

(e) In all SE2 waters the designated uses are:

1. Maintenance, migration and propagation of the natural and established biota;

2. Migration of diadromous fish;

3. Maintenance of wildlife;

4. Secondary contact recreation; and

5. Any other reasonable uses.

(f) In all SE3 waters the designated uses are:

1. Secondary contact recreation;

2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;

4. Maintenance of wildlife; and

5. Any other reasonable uses.

(g) In all SC waters the designated uses are:

1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

2. Primary and secondary contact recreation;

3. Maintenance, migration and propagation of the natural and established biota; and

4. Any other reasonable uses.

7:9-4.13 Designated uses of mainstem Delaware River and Delaware Bay (Summarized From the DRBC "Administrative Manual: Part III: Basin Regulations, Water Quality; Including Amendments Through June 29, 1983")

(a) The designated uses for Zone 1C, 1D, and 1E are:

1. Agricultural, industrial and public water supply after reasonable treatment;

2. Wildlife,

REFERENCE NO. 16

GSC-TR8645

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 2. MODELING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

GEMS> I

UNITED STATES PRINTING INK
LATITUDE 40:49:13 LONGITUDE 74: 5:33 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	409	8695	42674	69613	137615	259006
RING TOTALS	0	409	8695	42674	69613	137615	259006

GEMS> I

UNITED STATES PRINTING INK
135 LATITUDE 40:49:13 LONGITUDE 74: 5:33 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	146	3287	15996	26440	51003	96872
RING TOTALS	0	146	3287	15996	26440	51003	96872

	POPULATION	HOUSING
1/4	0	0
1/2	409	146
1	9,104	3,433
2	51,778	19,429
3	121,391	45,869
4	259,006	96,872

REFERENCE NO. 17

The Complete Handbook of Hazardous Waste Regulation

A Comprehensive, Step-by-Step Guide to the Regulation of Hazardous Wastes Under RCRA, TSCA, and Superfund

Travis Wagner

PERRY-WAGNER PUBLISHING CO., INC.

A Leader in the Environmental Information Field

Brunswick, Maine　　　　Washington, D.C.

EPA waste number	Hazardous waste	Hazard code[1]
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phorate production	(T)
K039	Filter cake from the distillation of diethylphosphorodithioic acid in the production of phorate	(T)
K040	Wastewater treatment sludge from the production of phorate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K098	Untreated process wastewater from the production of toxaphene	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K099	Untreated wastewater from the production of 2,4-D	(T)
	Explosives	
044	Wastewater treatment sludges from the manufacturing and processing of explosives	(R)
045	Spent carbon from the treatment of wastewater containing explosives	(R)
046	Wastewater treatment sludges from the manufacturing, formulation, and loading of lead-based initiating compounds	(R)
047	Pink/red water from TNT operations	(R)
	Petroleum Refining	
048	Dissolved air floatation (DAF) float from the petroleum refining industry	(T)
049	Slop oil emulsion solids from the petroleum refining industry	(T)

EPA waste number	Hazardous waste	Hazard code[1]
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry	(T)
	Iron and Steel	
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)
K062	Spent pickle liquor generated by steel finishing operations of facilities within iron and steel industry SIC codes 331 and 332.	(C,T)
	Secondary Lead	
K069	Emission control dust/sludge from secondary lead smelting	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	(T)
	Veterinary Pharmaceuticals	
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)
	Ink Formulation	
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment	(T)

EPA waste number	Hazardous waste	Hazard code[1]
	used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead	
	Coking	
K060	Ammonia still lime sludge from coking operations	(T)
K087	Decanter tank tar sludge from coking operations	(T)

139

Commercial Chemical Products

The following P code wastes are considered acutely hazardous.

P023 Acetaldehyde, chloro-
P002 Acetamide, N-(aminothioxomethyl)-
P057 Acetamide, 2-fluoro-
P058 Acetic acid, fluoro-, sodium salt
P066 Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
P001 3-(alpha-acetonylbenzyl)-4-hydroxycoumarin and salts, when present at concentrations greater than 0.3%
P002 1-Acetyl-2-thiourea
P003 Acrolein
P070 Aldicarb
P004 Aldrin
P005 Allyl alcohol
P006 Aluminum phosphide
P007 5-(Aminomethyl)-3-isoxazolol
P008 4-aAminopyridine
P009 Ammonium picrate (R)
P119 Ammonium vanadate
P010 Arsenic acid
P012 Arsenic(III) oxide
P011 Arsenic (V) oxide
P011 Arsenic pentoxide
P012 Arsenic trioxide
P038 Arsine, diethyl
P054 Aziridine

P013 Barium cyanide
P024 Benzenamine, 4-chloro-
P077 Benzenamine, 4-nitro-
P028 Benzene, (chloromethyl)-
P042 1,2-Benzenediol, 4-[(1-hydroxy-2-(methyl-amino)ethyl)]-
P014 Benzenethiol
P028 Benzyl chloride
P015 Beryllium dust
P016 Bis(chloromethyl) ether
P017 Bromoacetone
P018 Brucine

P021 Calcium cyanide
P123 Camphene, octachloro-
P103 Carbamimidoselenoic acid
P022 Carbon bisulfide
P022 Carbon disulfide

REFERENCE NO. 18

R-584-10-87-02

FINAL
EXPANDED SITE INSPECTION REPORT
INDUSTRIAL LATEX SITE
WALLINGTON, NEW JERSEY

PREPARED UNDER
TECHNICAL DIRECTIVE DOCUMENT NO. 02-8703-76
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JANUARY 21, 1988

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

Vance M Matthews

VANCE M. MATTHEWS
PROJECT MANAGER

REVIEWED/APPROVED BY:

Ronald M. Naman

RONALD M. NAMAN
FIT OFFICE MANAGER

2.2.4 Geology

Regional Setting

Figure 2-8 depicts the physiographic provinces of New Jersey. Figure 2-9 presents a geologic cross-section of New Jersey. The Industrial Latex property lies within the Triassic Lowlands subdivision of the Piedmont Province. The area is underlain by the Triassic-age Brunswick Formation of the Newark group. Regionally, the Triassic Lowlands are characterized by an underlying bedrock of northwestward-sloping sedimentary deposits, occasionally interrupted by basaltic lava flows and diabase intrusions. The sedimentary bedrock deposits of shale, siltstone, and sandstone are expressed at the surface by gently rolling lowlands. The basalts and diabase form highly resistant ridges, known as the Watchung Mountains. The Industrial Latex Site is approximately 4.5 miles southeast of the First Watchung Mountain.

The Industrial Latex Site and surrounding areas have been affected by the most recent glaciation. The terminal moraine of the Wisconsin Stage glaciation is approximately 14 miles southwest of the site. The effect of glaciation was to scrape elevated areas, exposing bedrock on ridges, and to deposit till in low-lying areas. Elsewhere, the upper surface of the Brunswick is usually weathered to a clayey regolith. However, in this area the glaciation removed almost all of the regolith and soils before till was deposited. Some of the glacial materials along valleys have since been reworked and stratified by surface waters. Till deposited at higher elevations is generally not sorted and consists of mixed clays, sands, and gravels.

Site Geology

The Industrial Latex property is situated on the western slope of a northeast-southwest trending ridge. Bedrock was encountered at approximately 40 ft below ground surface during the installation of on-site monitoring wells. Further down in the valley 0.50 mile west of Industrial Latex, stratified drift is 118 feet thick over bedrock (NJDEP well permit records). At least 12 feet of saturated clay was noted in the easternmost portion of the site between Building No. 1 and the Conrail/New Jersey Transit railroad tracks. Along the access road at the western side of the site, silt and clay was noted to a depth of 7 feet and clay to 12 feet (USGS, 1986).

2.2.5 Hydrogeology

The Brunswick Shale Aquifer is the primary source of groundwater in the area. The formation is up to 6000 feet thick, with the upper 300-500 feet most often utilized for water supply. This is due to the fact that groundwater flow in the Brunswick Shale is mostly dependent on fracturing in the rock, and only to a small degree on the bedding characteristics. Generally, the shale is more fractured toward the top of the formation. Fracturing is less frequent and less developed with depth (Herpers and Barksdale, 1951). However, there may be large variations both horizontally and vertically, and assumptions cannot be made on the nature of the fracture systems without site-specific studies. Within the Brunswick Shale, wells may be located near each other and still be hydraulically unconnected. Conversely, more-distant wells may be hydraulically connected.

The Brunswick Formation dips 10-20 degrees toward the northwest. However, the major fracture systems in this formation run nearly vertical from northeast to southwest. As a result, groundwater contours in the shale typically appear elongated, with the long axis running northeast to southwest. This type of groundwater flow is difficult to characterize using formulae which have been developed assuming uniform conditions and isotropic flow. For this reason, site-specific work was necessary for an accurate assessment of groundwater flow. Factors which may influence flow locally in the bedrock include:

- Degree of fracturing in bedrock
- Hydraulic connections between fractures and/or fracture zones
- Weathering or filling of fractures
- Pumping wells in the area
- Groundwater recharge to the aquifer

Monitoring wells installed at the Curtiss-Wright facility, approximately 0.50 mile north of the site, show groundwater in bedrock to be flowing generally westward. Groundwater in the overburden (stratified drift) appeared to be flowing in a west to northwesterly direction (USGS, 1986).

The depth to water at Industrial Latex is greater than 14 feet below the ground surface at the southern end of the property where buried tanks were excavated (USGS, 1986). Near the railroad tracks, saturated clay indicates a possible perched condition.

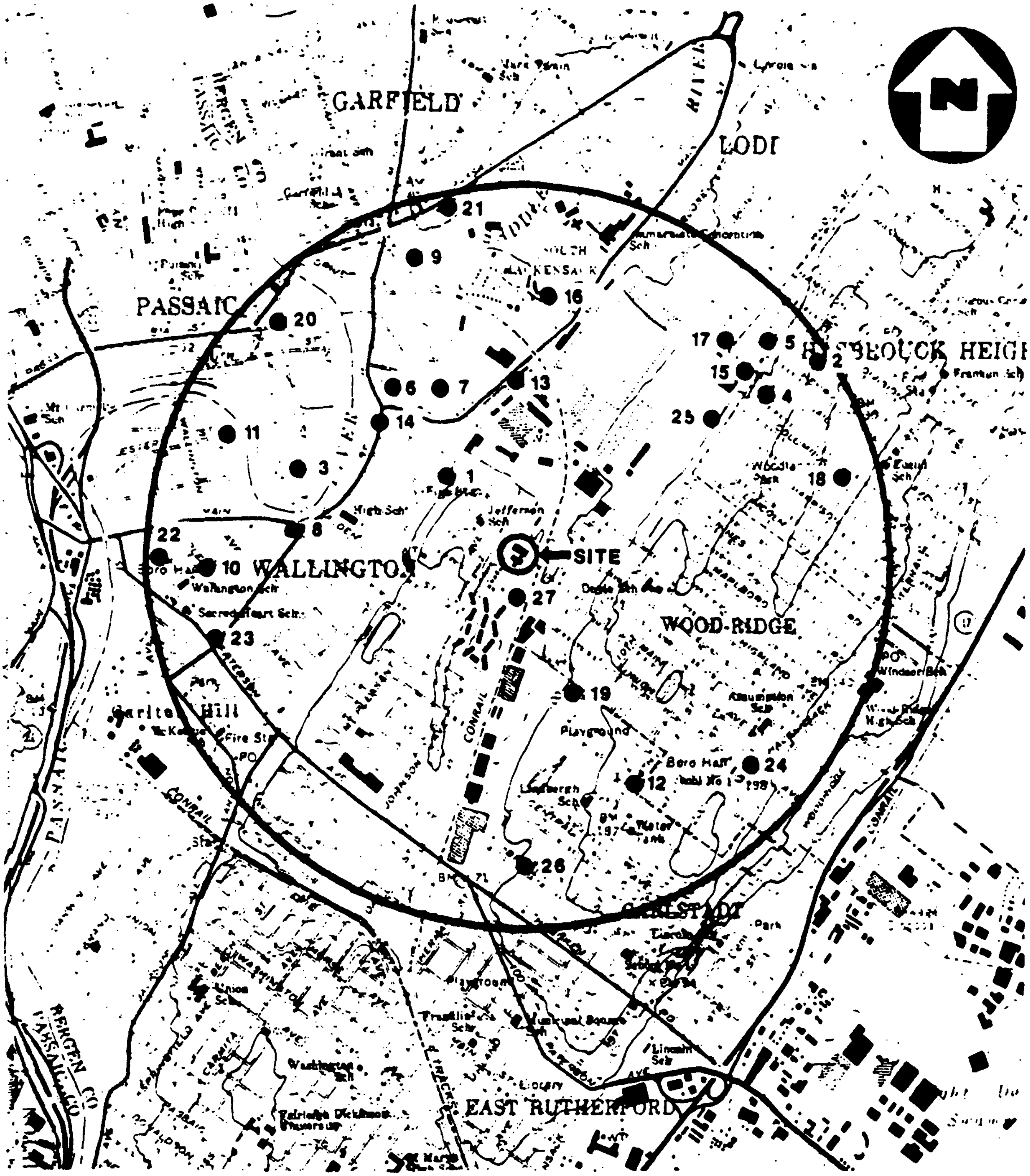
Locally, industrial or public supply wells are drilled to depths of up to 300 or 400 feet, and are cased only into the top of bedrock. These open bedrock wells provide an interconnection between fracture zones, and act as a potential conduit for contaminant migration. In addition, these wells can disrupt local groundwater flow patterns by connecting water-bearing zones with different hydraulic heads. The hydraulic heads observed in these deep wells are a composite (Carswell and Rooney, 1976). The change in hydraulic head may encourage groundwater flow from zones of higher hydraulic head to zones of lower hydraulic head.

A caliper log of the Wallington Borough public supply well on Spring Street, just southeast of Industrial Latex, indicates major fracture zones at 36-40 feet deep and 53-66 feet deep. Smaller fractures were noted down the rest of the 392-foot-deep well (USGS, 1986).

Other local factors may affect groundwater flow and contaminant migration. Poorly sealed storm drains located along the eastern side of the railroad tracks may allow groundwater to move into the drainage system, or may leak stormwater into the groundwater. An historic stream, located east of the Industrial Latex Site along the present railroad right-of-way (refer to Figure 2-6), originally channeled drainage from the area into Saddle River. The stream passed through what is now the Curtiss-Wright facility. The more permeable stream deposits may provide an alternative route for shallow groundwater movement. Available information is not sufficient to determine effects of this stream upon groundwater flow.

Groundwater Use

Existing well records were compiled from NJDEP files. These records indicate that groundwater is a major source of domestic and industrial water within 3 miles of the site. The vast majority of the well logs indicate that the Brunswick Formation is the aquifer most often tapped for potable water supply. Further study will show which of these wells, particularly those listed for domestic or food-industry supply, are still in use. Public supply wells for the Borough of Wallington are located just southeast of the Industrial Latex property. Other public supply wells are northwest and west of the site, many of which are within 1 mile. All of these public supply wells have been closed due to groundwater contamination,



NOTE: SEE TABLE 4-7 FOR REFERENCED WELL DATA

GROUNDWATER WELLS WITHIN
1-MILE RADIUS OF INDUSTRIAL LATEX
INDUSTRIAL LATEX, WALLINGTON, N.J.

145

FIGURE 4-10

NUS CORPORATION

SCALE: 1" = 2000'

TABLE 4-7

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
1	31 Kossuth St Wallington, NJ	Mr. Kowalowitz	118	Brunswick	Domestic	Unable to contact
2	116 Prospect St Garfield, NJ (a)	Frank Felber	100	Brunswick	Domestic	
3	122 Prospect St Garfield, NJ (a)	Rose Tuminia	95	Brunswick	Domestic	
4	232 Springfield Ave Hasbrouck Heights, NJ	Mr. Amato	160	Brunswick	Domestic	Used for lawn watering only
5	138 Woodside Ave Hasbrouck Heights, NJ	Robert Daub	162	Brunswick	Domestic	
6	Main St/Midland Ave Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
7	Dull Field Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
8	Main Ave Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
9	Hobard St Garfield, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
10	Maple St/Union Blvd. Wallington, NJ	Boro of Wallington	300	Brunswick	Municipal	Used for testing only
11	Lester St Wallington, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination
12	Jefferson Ave Carlstadt, NJ	Boro of Wallington	400	Brunswick	Municipal	Closed due to contamination

146

TABLE 4-7 (CONT'D)

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
18	Lot 4, Block 27 Hasbrouck Heights, NJ	Exxon	16	sand	Commercial	Observation
			15	sand	Commercial	Observation
			15	sand	Commercial	Observation
			15	sand	Commercial	Observation
			14	sand	Commercial	Observation
19	443 Garden St Carlstadt, NJ	A & M Electroplating Corp.	375	Brunswick	Industrial	
20	8th St Passaic, NJ	J.L. Prescott & Co.	500	Brunswick	Commercial	Used for air conditioning
21	113 Farnham Ave	Yoo-Hoo Beverage Co.	303	Brunswick	Industrial	
22	Main St/Paterson Ave Wallington, NJ	Amoco Oil Co.	16	sand	Industrial	Observation
			15	sand	Industrial	Observation
			15	sand	Industrial	Observation
			15	sand	Industrial	Observation
			15	sand	Industrial	Observation
			15	sand	Industrial	Observation
			15	sand	Industrial	Observation

147

TABLE 4-7 (CONT'D)

GROUNDWATER WELLS WITHIN 1-MILE RADIUS OF INDUSTRIAL LATEX

Map Well No.	Address	Owner	Well Depth (ft)	Formation	Use	Comments
23	455 Paterson Ave Wallington, NJ	King Car Wash	200	Brunswick	Commercial	Used for washing cars
24	277 Hackensack St	Econo-o-Wash	302	Brunswick	Commercial	Owner was unaware of a well
25	Woodridge, NJ	Wright & Aeronautical Equip. Co.	447	Brunswick	Industrial	Used in processing
			445	Brunswick	Industrial	Used in processing
			430	Brunswick	Industrial	Used in processing
			403	Brunswick	Industrial	Used in processing
			340	Brunswick	Industrial	
			337	Brunswick	Industrial	
			312	Brunswick	Industrial	
26	Broad St/Union St Carlstadt, NJ	Record Electrical Plating Co.	200	Brunswick	Industrial	
27	Spring St Wallington, NJ	Boro of Wallington	392	Brunswick	Municipal	Not in use

Note to Table 4-7:

(a) Address indicated is the address of owner of the well. All wells are located within a 1-mile radius of the site as shown in Figure 4-10.

REFERENCES

ASTM, 1972. American Society for Testing and Materials, Philadelphia, Pennsylvania. 1972.

ASTM, 1974. American Society for Testing and Materials, Philadelphia, Pennsylvania. 1974.

Carswell, L.D. 1976. Appraisal of Water Resources in the Hackensack River Basin, New Jersey, U.S. Geological Survey Water Resources Investigations, 76-74.

Carswell, L.D. and J.G. Rooney, 1976. Summary of Geology and Ground-Water Resources of Passaic County, New Jersey. U.S. Geological Survey Water Resources Investigations, 76-75.

Deeds for the Industrial Latex Property, Bergen County Administration Building, Department of Mortgages and Deeds, Main Street, Hackensack, New Jersey.

Donigian, A.S., Lo, T.Y.R., and E.W. Shanahan. 1983. Rapid Assessment of Potential Ground-water Contamination Under Emergency Response Conditions. Anderson-Nichols/West. Palo Alto, California, for U.S. Environmental Protection Agency, Washington, D.C. Contract No. 68-03-3116.

EPA-Emergency and Remedial Response Division Phase I and II Sampling Results of Industrial Latex, Borough of Wallington, New Jersey, 1986.

EPA, 1985. Chemical, Physical, and Biological Properties of Compounds Present at Hazardous Waste Sites. United States Environmental Protection Agency, prepared by Clement Associates, Inc., Arlington, VA.

EPA. 1986. Draft Superfund Exposure Assessment Manual, submitted by H.L. Schultz, W.A. Palmer, G.H. Dixon, A.F. Gleit to the Office of Emergency and Remedial Response U.S. Environmental Protection Agency, Washington D.C., Contract No. 68-01-6271.

EPA, 1986a. Superfund Public Health Evaluation. Office of Emergency and Remedial Response, Office of Solid Waste and Emergency Response. U.S. EPA, Washington, D.C. 20460.

EPA, 1986b. Aerial Photographs, Environmental Monitoring Systems Laboratory, Las Vegas, Nevada.

EPA, 1987. Final Work Plan Expanded Site Inspection Industrial Latex Site, Wallington, New Jersey. Prepared by NUS Corporation, Edison, New Jersey.

Fairless. B.J., 1984. Quality Assurance and Work Plans for the Region VII Part of the National Dioxin Study, U.S. Environmental Protection Agency, Region VII, Environmental Services Division, Kansas City, Kansas.

Farino, W., Spawn, P., Jasinski, M., and B. Murphy. 1983. Evaluation and Election of Models for Estimating Air Emissions from Hazardous Waste Treatment, Storage and Disposal Facilities. Revised Draft Final Report. GCA Corporation. GCA/Technology Division. Bedford, Massachusetts, prepared for U.S. Environmental Protection Agency, Office of Solid Waste. Land Disposal Branch. Contract No. 68-02-3168.

Fetler, C.W. Jr., 1980. Applied Hydrogeology. Charles E. Merrill Publishing Company, Columbus, Ohio.

Freeze, R.A., and J.A. Cherry. 1979. Groundwater, Prentice-Hall Inc., Englewood Cliffs, N.J.

Fire Marshall's Report on Conditions at the Industrial Latex property, Submitted by Emil J. Sudol, Chief, Fire Prevention Bureau, Wallington Fire Department, November 20, 1985.

Haith, D.A. 1980. A Mathmatical Model for Estimating Pesticide Losses in Runoff. Journal of Environmental Quality, 9:428-433.

Herpers, H. and Henry C. Barksdale, 1951. Special Report 10. Preliminary Report on the Geology and Ground-Water Supply of Newark, New Jersey Area, Division of Water Policy and Supply, U.S. Department of the Interior, Geological Survey.

Hwang, S.T., 1982. Toxic Emissions from Land Disposal Facilities, Environmental Progress, Volume 1, Number 1.

Karickhoff, S.W., D.S. Brown and T.A. Scott, 1979. Sorption of Hydrophobic Pollutants on Natural Sediments. Water Resources 13, 241-248.

Lyman, W.J., W.F. Reehl, and H.H. Rosenblatt, 1982. Handbook of Chemical Property Estimation Methods. McGraw-Hill Book Co., New York.

Master Area Reference File (MARF) of the 1980 Census, General Software Corporation, Landover, Maryland, June 26, 1984.

Merril, F.J.H., Darton, N.H., Hollick, A., Salisbury, R.D., Dodge, R.E., Willis, B., and H.A. Pressey, 1902. Description of the New York City District (New York-New Jersey): U.S. Geological Survey Geologic Atlas, Folio 83.

National Oceanic and Atmospheric Administration (NOAA), 1982. Climatograph of the United States No. 81, Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days, 1951-1980, NJ. Asheville, NC. September, 1982.

New Jersey Department of Environmental Protection, Division of Water Resources Well Permit Files.

New Jersey Department of Environmental Protection, Atlas Map No. 26 (1955) with Water Supply Overlay.

New Jersey State Department of Health, Sampling Results for the Borough of Wallington Municipal Water Supply Wells, Year 1985, New Jersey Department of Environmental Protection, Division of Water Resources, May 24, 1985.

NUS Corporation, Operating Guidelines Manual, NUS Corporation, Zone Project Management Office, Gaithersburg, Maryland.

REFERENCES (CONT'D)

Preliminary Site Assessment, Industrial Latex Company, Wallington, New Jersey, prepared by the EPA Response and Prevention Branch, Emergency and Remedial Response Division, February 19, 1986.

Results of Sampling and Analysis Plan for Compliance with the Environmental Cleanup Responsibility Act (ECRA), Curtiss-Wright Corporation, Wood-Ridge, New Jersey, August 26, 1985.

Skidmore, E.L. and N.P. Woodruff. 1968. Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss, Agriculture Handbook No. 346, U.S. Department of Agriculture, Agriculture Research Service, Washington, D.C.

Stewart, B.A., D.A. Woolhiser, W.H. Wischmeier, J.H. Caro, and M.H. Frere, 1975. Control of Water Pollution from Crop lands. Vol. I, U.S.EPA, Washington, D.C. EPA-600/2-75-026a.

Thibodeaux, L.J. and S.T. Hwang. 1982. Landfarming of Petroleum Wastes-Modeling the Air Emission Problem, Environmental Progress, Volume 1, Number 1.

Topographic Map, Weehawken, N.J.-N.Y. Quadrangle, 7.5 Minute Series, Department of Interior, U.S. Geological Survey, 1967, photorevised 1981.

United States Department of Agriculture, Soils Maps for Bergen County, New Jersey.

USGS, 1986. Written Communication: Summary of Existing Data in the Vicinity of the Industrial Latex Site, Wallington Borough, New Jersey. U.S. Geological Survey, West Trenton, New Jersey.

Wischeier, W.H. and D.D. Smith, 1978. Predicting Rainfall Erosion Losses - A Guide to Conservation Planning. Agriculture Handbook No. 537. U.S. Department of Agriculture, Washington, D.C.

Wolfe, P.E., 1977. The Geology and Landscapes of New Jersey, Crane Russak and Company Inc., New York.

EXPANDED SITE INSPECTION REPORT
INDUSTRIAL LATEX SITE
WALLINGTON, NEW JERSEY
VOLUME 2

APPENDIX A

APPENDIX A-3

N.J. DEPARTMENT OF HEALTH SAMPLING RESULTS FOR THE BOROUGH OF WALLINGTON MUNICIPAL WATER SUPPLY WELLS

APPENDIX A-3

NEW JERSEY STATE DEPARTMENT OF HEALTH SAMPLING RESULTS FOR THE BOROUGH OF WALLINGTON MUNICIPAL WATER SUPPLY WELLS, YEAR 1985.

VOLATILES						
SAMPLE NUMBER	WELL No.8	WELL No.5	DULL WELL	LESTER WELL	WELL AT 24 UNION BLVD.	WELL No.5 AT HATHAWAY
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MATRIX	water	water	water	water	water	water
DATE	4/5/85	4/5/85	4/5/85	4/5/85	7/29/85	7/29/85
Bromoform	NA	NA	NA	NA	4.1	
chloroform	31				NA	NA
tetrachloroethene			37	14	17	
trichloroethene			33		29	89
1,1,1-trichloroethane			10			2.1
1,1-dichloroethane	2	12				12
1,1-dichloroethene		3				4.7
1,2-dichloroethane	NA	NA	NA	NA		4.7
1,2-dichloroethene					30	1148
1,2-dichloropropane		2	23		NA	NA

NOTE:
NA - NOT ANALYZED FOR

APPENDIX A-4

ANALYTICAL RESULTS FOR MONITORING WELL SAMPLING AT THE CURTISS-WRIGHT CORPORATION, WOOD-RIDGE N.J.

APPENDIX A-4
ANALYTICAL RESULTS FOR ROCK WELL (RW) SAMPLES
COLLECTED AT THE CURTISS-WRIGHT CORPORATION
WOOD-RIDGE, NEW JERSEY

VOLATILES						
SAMPLE NUMBER	RW-1	RW-2	RW-3	RW-4	RW-5	RW-6
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Chloromethane						
Bromomethane						
Vinyl Chloride						
Chloroethane						
Methylene Chloride	166	182				
Acetone						
Carbon Disulfide						
1,1-Dichloroethene					1220	143
1,1-Dichloroethane						
Trans-1,2-Dichloroethene	475	67	61	3500		64000
Chloroform						
1,2-Dichloroethane					2010	
2-Butanone						
1,1,1-Trichloroethane				162	2170	222
Carbon Tetrachloride						
Vinyl Acetate						
Bromodichloromethane						
1,1,2,2-Tetrachloroethane						
1,2-Dichloropropane						
Trans-1,3-Dichloropropene						
Trichloroethene	56		8	1400	300	20000
Dibromochloromethane						
1,1,2-Trichloroethane						
Benzene			8		240	
Cis-1,3-Dichloropropene						
2-Chloroethylvinylether						
Bromoform						
2-Hexanone						
4-Methyl-2-Pentanone						
Tetrachloroethene				1750	270	24000
Toluene					234	
Chlorobenzene						
Ethylbenzene				65	191	
Styrene						
Total Xylenes						

APPENDIX A-4
ANALYTICAL RESULTS FOR OVERBURDEN WELL (OW) SAMPLES
COLLECTED AT THE CURTISS-WRIGHT CORPORATION
WOOD-RIDGE, NEW JERSEY

VOLATILES								
SAMPLE NUMBER	OW-1	OW-2	OW-3	OW-4	OW-5(a)	OW-6(b)	OW-7	OW-8
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Chloromethane								
Bromomethane								
Vinyl Chloride								
Chloroethane								
Methylene Chloride			372					
Acetone								
Carbon Disulfide								
1,1-Dichloroethene						634		
1,1-Dichloroethane						203		
Trans-1,2-Dichloroethene	13		20200			10900		
Chloroform	13							
1,2-Dichloroethane								
2-Butanone								
1,1,1-Trichloroethane						674		
Carbon Tetrachloride								
Vinyl Acetate								
Bromodichloromethane								
1,1,2,2-Tetrachloroethane								
1,2-Dichloropropane								
Trans-1,3-Dichloropropene								
Trichloroethene			22300			1910		26
Dibromochloromethane								
1,1,2-Trichloroethane								
Benzene	106			5290	1220	638		
Cis-1,3-Dichloropropene								
2-Chloroethylvinylether								
Bromoform								
2-Hexanone								
4-Methyl-2-Pentanone								
Tetrachloroethene			828			1270		
Toluene				3810	934	1240		
Chlorobenzene								
Ethylbenzene				1280		207		
Styrene								
Total Xylenes								

NOTES:

(a) Groundwater samples collected from well OW-5 contained Naphthalene (208 ug/l) and Phenanthrene (87 ug/l).

(b) Groundwater samples collected from well OW-6 contained Naphthalene (61 ug/l) and 1,2-Dichlorobenzene (73 ug/l).

APPENDIX A-5

STRATIGRAPHIC LOGS AND WELL CONSTRUCTION DIAGRAMS COMPLETED AS PART OF THE HYDROGEOLOGICAL INVESTIGATION AT THE INDUSTRIAL LATEX SITE

NUS CORPORATION

TDD NO.: [illegible]

PROJECT: Industrial Latex

BOREHOLE NO.: B-3

BOREHOLE LOG

BOREHOLE LOCATION: +100 ft. North, 70 ft. West of Bldg #1, NW corner

CONTRACTOR: W.C. Services

DRILLER: Mike Kavlunas

GROUND SURFACE ELEV.(FROM MSL) +54.99 (FT)

COMPLETION DEPTH: 12.0 ft.

DATE STARTED 6-11-87 COMPLETED: 6-11-87

LOGGED BY: G. Pollack CHECKED BY: PVS

TYPE OF RIG: TRUCK ☑ TRAILER MOUNTED ☐ TRIPOD ☐ OTHER ☐ ______ MANUFACTURER CME750

CASING DIA. ______ INCHES FROM ______ TO ______ FEET

DRILLING METHOD: Hollow Stem Auger BIT TYPE ______ BIT DIA. 4 in. OD

SAMPLING EQUIP. (TYPE & SIZE) SPLIT SPOON 24 in. length DIA. 2 in. OD

TUBE ______ DIA. ______

CORE ______ DIA. ______

SAMPLER HAMMER WEIGHT (LBS) 140 AVERAGE FALL (INCHES) 30

CASING HAMMER WEIGHT (LBS) ______ AVERAGE FALL (INCHES) ______

GROUNDWATER	DEPTH	DATE	TIME
FIRST ENCOUNTERED	10.0 ft.	6-11-87	

DEPTH (FT)	SAMPLE TYPE & NO.	SAMPLE DEPTH (FT)	BLOWS/6"	REC. (FT)	RQD %	SAMPLE DESCRIPTION	STRATA	REMARKS
	SS-1	0-2	10	1.4		Med. dense brown f-m sand, some silt, trace gravel with roots.	SM (Fill)	SS-1 (surface) sent to lab as NJ07B-3S-1 for HSL analysis. Sample Moist.
			10					
1			6					
			4					
2	SS-2	2-4	6	1.0		Med.dense brown silty f-m sand, trace gravel.	(Fill)	
			5					
3			15					
			15					
4	SS-3	4-6	6	1.7		Med. dense brown silty f-m sand, trace gravel.		
5			7					
			7				SM	
			8					
6	SS-4	6-8	8	0.3		Med. dense brown silty sand, trace clay.		Sample moist. SS-4 sent to lab as NJ07B-3S-2 for VOA only. Composite of 0-7 ft. sent to lab for remainder of HSL analysis.
7			8					
			8					
			11					
8	SS-5	8-10	6	0.8		Med. dense f-m sand, some silt, trace gravel, grading to sandy silt, some clay, some gravel.		
9			6				ML	
			7					
10			6				▼	Water table 10.0 ft.

159

SIGNATURE: ______ DATE: ______

[redacted]

ID	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
26 6126	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	15	3	3" X 15'	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096
26 6127	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	15	3	3" X 15'	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096
26 3525	116 Prospect St., Garfield, NJ	26-03-827	100	6	unknown		DOM	Kaziemierz Komsa	BrunSH	poor		10		0	ERR	John Lauritsen		0.582	0.2557	0.635
26 5727	Passaic St., Hasbrouck Hgts., NJ	26-03-829	202	6	unknown		DOM	William Postman		no		22	2	23	0.96	E.S. Richardso		0.97	0.2557	1.003
26 4329	220 Boulevard., Hasbrouck Hgts., NJ	26-03-832	180	6	none		DOM	Nimmo & Co.		no		25	2	31	0.81	E.S. Richardso		1.358	0.7671	1.559
26 680	462 Broadway, Paterson, NJ	26-03-835	150	6	unknown		IND	Geerinck Const. Co.		no		10	4		ERR	J. Foster		1.358	0.5114	1.451
26 1071	488 Terrace Ave., Hasbrouck Hgts., NJ	26-03-836	90	6	none		DOM	Paul Spinelle	BrunSH	poor		10	1	31	0.32	E.S. Richardso		1.552	0.5114	1.634
26 5123	186 Berkshire Rd., Hasbrouck Hgts., NJ	26-03-836	198	6	unknown		DOM	William Iohen		no		25	2	26	0.96	E.S. Richardso		1.552	0.5114	1.634
26 4705	552 Terrace Ave., Hasbrouck Hgts., NJ	26-03-839	203	6	unknown		IND	Elio M. Maroni		no		20	2	60	0.33	E.S. Richardso		1.552	0.2557	1.572
26 4725	Airport Rd., Teterboro, NJ	26-03-839	480	8	unknown			Combinates Corp.		no		110	2	200	0.55	E.S. Richardso		1.552	0.2557	1.572
26 2172	Route 17, Hasbrouck Hgts., NJ	26-03-847	288	6	unknown		IND	Esso Standard Oil Co.	BrunSH	poor					ERR	Rinbrand Well		0	-0.511	0.511
26 4277	611-641 Broad St., Carlstadt, NJ	26-03-848	430	6	none		COOL	Bene's Chemical Works, INC	BrunSH	poor		50	3	170	0.29	E.S. Richardso		0.194	-0.511	0.546
26 5156	277 Hackensack St., Wood Ridge, NJ	26-03-858	302	6	unknown		Laundry	Econ-o-Wash		no		65	3	90	0.72	E.S. Richardso		0.776	-0.511	0.929
26 547	Hackensack Ave., Wood Ridge, NJ	26-03-859	145	6	unknown		IND	Terminal Const. Co.		no		120	4	60	2.00	John O. Grayno		0.97	-0.511	1.096
26 4722	Airport Rd., Teterboro, NJ	26-03-863	480	8	none		COOL	Combinates Corp.		no		100	2	194	0.52	E.S. Richardso		1.552	0	1.552
26 5412	211 Route 17, Hasbrouck Hgts., NJ	26-03-864	167	6	unknown		Diner	Cosmos Diner, INC	BrunSH	poor		40	3	62	0.65	E.S. Richardso		1.164	-0.255	1.191
26 853	Washington Ave., Carlstadt, NJ	26-03-867	255	8	unknown		IND	Carlton-Cooke Corp.	BrunSH	poor		150	8	135	1.11	Peerless Well		1.164	-0.511	1.271
26 458	512 Springfield Ave., Hasbrouck Hgts., NJ	26-03-867	61	6	none		DOM	Thomas Basse	BrunSH	poor		30	1	20	1.50	E.S. Richardso		1.164	-0.511	1.271
26 1041	Route #17, Wood Ridge, NJ	26-03-867	103	6	unknown		DOM	August Ferretti	BrunSH	poor		15	1	14	1.07	E.S. Richardso		1.164	-0.511	1.271
26 4914	Union Ave. & Delois St., E. Rutherford, NJ	26-03-867	305	8	none		COOL	DuBois Chemicals	BrunSH	poor		?	?	?	ERR	Rinbrand Well		1.164	-0.511	1.271
26 4698	443 Garden St., Carlstadt, NJ	26-03-871	375	8	unknown		IND	A & M Electro Plating Corp.	BrunSH	poor		110	?	200	0.55	E.S. Richardso		0	-0.767	0.767
26 926	226 Paterson Ave., E. Rutherford, NJ	26-03-875	153	6	unknown		COOL	Mr. John Huettemen	BrunSH	poor		30	3	20	1.50	Rinbrand Well		0.194	-1.022	1.041
26 7752	Paterson Plank Rd., Carlstadt, NJ	26-03-878	17	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					ERR	Empire Soils I		0.194	-1.278	1.293
26 7753	Paterson Plank Rd., Carlstadt, NJ	26-03-878	14	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					ERR	Empire Soils I		0.194	-1.278	1.293
26 7754	Paterson Plank Rd., Carlstadt, NJ	26 03-878	20	8	4" X 10'	PVC	OBS	Cosan Chemical Corp.		no					ERR	Empire Soils I		0.194	-1.278	1.293
26 7482	Paterson Plank Rd., Carlstadt, NJ	26-03-878	4	4	4" X 2'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 7481	Paterson Plank Rd., Carlstadt, NJ	26-03-878	4	4	4" X 2'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 7480	Paterson Plank Rd., Carlstadt, NJ	26-03-878	4	4	4" X 2.5'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 7479	Paterson Plank Rd., Carlstadt, NJ	26-03-878	3.7	4	4" X 2.2'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 7478	Paterson Plank Rd., Carlstadt, NJ	26-03-878	2.3	4	4" X 1.3'	PVC	OBS	Cosan Chemical Corp.	soil	poor					ERR	Empire Soils I		0.194	-1.278	1.293
26 4682	Ethel Blvd., Wood Ridge, NJ	26-03-882	24.5	4	4" X 10'	PVC	Test	Rovic Const. Co.	sand	poor					ERR	Rinbrand Well		0.776	-0.767	1.091
26 4683	Ethel Blvd., Wood Ridge, NJ	26-03-882	19	4	4" X 10'	PVC	Test	Rovic Const. Co.	sand	poor					ERR	Rinbrand Well		0.776	-0.767	1.091
26 4684	Ethel Blvd., Wood Ridge, NJ	26-03-882	18.5	4	4" X 10'	PVC	Test	Rovic Const. Co.	marl	poor					ERR	Rinbrand Well		0.776	-0.767	1.091
26-2992	Route #17, Carlstadt, NJ	26-03-885	205	6	unknown		IND	Bergen Iron & Engineering Co.	BrunSH	poor		13		17	0.76	Frank Bott, III		0.776	-1.022	1.283
26 2936	590 Commercial Ave., Carlstadt, NJ	26-03-886	153	6	unknown		COOL	Benedict Packing Corp.	BrunSH	poor		50	?	65	0.77	Rinbrand Well		0.97	-1.022	1.409
26 4141	590 Commercial Ave., Carlstadt, NJ	26-03-886	350	6	none		IND	Benedict Packing Corp.	BrunSH	poor		175	8	150	1.17	Rinbrand Well		0.97	-1.022	1.409
26 1384	Route #17, Carlstadt, NJ	26-03-886	250	6	unknown		A/C	Buff's Diner	BrunSH	poor		45	3	72	0.63	E.S. Richardso		0.97	-1.022	1.409
26 1033	Carlstadt Test Well #2, Carlstadt, NJ	26-03-888	263	6	unknown			Hackensack Water Co.	BrunSH	good					ERR	Artesian Well		0.776	-1.278	1.495
26 2828	Broad & 13th Sts., Carlstadt, NJ	26-03-888	400	8	none		IND	Lancaster Chemical Co.	BrunSH	poor		55	8	128	0.43	Burrows Well D		0.776	-1.278	1.495
26 1075	Carlstadt Test Well #3, Carlstadt, NJ	26-03-888	86	8	none			Hackensack Water Co.	gravel	good		300	8	30	10.00	Artesian Well		0.776	-1.278	1.495
26 3021	Broad & Union Sts., Carlstadt, NJ	26-03-888	200	6	unknown		IND	Record Electrical Plating Co.	BrunSH	poor		90	8	70	1.29	Rinbrand Well		0.776	-1.278	1.495
26 1158	Moonachie Test Well #1, Moonachie, NJ	26-03-894	243	6	6" X 10'	Everdur		Hackensack Water Co.	BrunSH	good		60		177	0.34	Artesian Well		1.164	-1.022	1.549
26 487	Moonachie, N.J.	26-03-895	160	6	unknown		IND	Frank A. Rity	BrunSH	poor		20	0.5	30	0.67	Peerless Well		1.358	-1.022	1.700
26 368	Little Ferry Brons & Allum Foundry, Moonac	26-03-895	160	6	unknown		IND	Felix Cascello	BrunSH	poor		5	0.5	20	0.25	Arthur Wilhelm		1.358	-1.022	1.700
26 4300	Grand & Starly Rd., Carlstadt, NJ	26-03-895	300	8	none		COOL	Manhattan Products Co.	BrunSH	poor		65	6	114	0.57	Rinbrand Well		1.358	-1.022	1.700
26 4987	670 Dell Rd., Carlstadt, NJ	26-03-895	300	8	none		COOL	Thumann, INC	BrunSH	poor		250	6	178	1.40	Rinbrand Well		1.358	-1.022	1.700
26 376	Moonachie, NJ	26-03-896	160	6	unknown		IND	Atlantic Pipe Bending & Fabr. Co	BrunSH	poor		5	0.5	35	0.14	Arthur Wilhelm		1.552	-1.022	1.858
26 4979	55 Anderson Ave., Moonachie, NJ	26-03 897	202	6	unknown		COOL	Carter Manufacturing Co.	BrunSH	poor		45	3	178	0.25	E.S. Richardso		1.164	-1.278	1.729
26 3711	150 W. Commercial Ave., Moonachie, NJ	26-03-897	200	8	unknown		IND	World Plastic Extruders, INC	BrunSH	poor		100	8	25	4.00	Algeier Bros.		1.552	-1.278	1.700

ID	ADDRESS	LOCNS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMP	DRAW	S'CAP	DRILLERCOMMENTX	Y	DIST
26-4616	73 McArthur Dr., Clifton, NJ	26-02-6??	185	6	unknown		DOM	Eugene Hertzberg	BrunSH	OK		65	4	70	0.93	Engineering Dr-1.492	1.0220	3.630
26-4342	165 Gould Street, Paterson, NJ	26-02-61?	250	8	unknown		COOL	Scientific Electro Corp.		no		55	8	165	0.33	W.H. Beatty -1.492	2.5570	4.348
26-2916	Hazel Ave., Clifton, NJ	26-02-614	132	6	unknown		AC	Mountainside Inn	BrunSH	poor		36	1	8	4.50	Burrows Well D-1.492	2.8127	4.443
26-1096	30 Pearlbrook Dr., Clifton, NJ	26-02-615	95	6	unknown		DOM	Frank Obert		no		15				Foster -1.298	2.8127	4.134
26-399	Goulds Ave., Paterson, NJ	26-02-616	505	8	unknown		IND	Farmland Dairy	BrunSH	no		255	8	85	3.00	Rinbrand Well -1.104	2.8127	4.180
26-2922	Hazel Avenue, Clifton, NJ	26-02-617	133	6	unknown		AC	Mountainside Inn	BrunSH	poor						Burrows Well D-1.492	2.5570	4.320
26-887	Circle Ave., Clifton, NJ	26-02-618	400	10	unknown		COOL	PRESS	BrunSH	poor		164	8	145	1.13	Rinbrand Well -1.298	2.5570	4.173
26-7321	Paterson, NJ	26-02-618	12.1	3	10	PVC	OBS	EXXON	BrunSH	yes						Diamond Drills-1.298	2.5570	4.173
26-7322	Paterson, NJ	26-02-618	7	3	10	PVC	OBS	EXXON	BrunSH	yes						Diamond Drills-1.298	2.5570	4.173
26-7323	Paterson, NJ	26-02-618	13	3	10	PVC	OBS	EXXON	BrunSH	yes						Diamond Drills-1.298	2.5570	4.173
26-7324	Paterson, NJ	26-02-618	11.8	3	10	PVC	OBS	EXXON	BrunSH	yes						Diamond Drills-1.298	2.5570	4.173
26-4826	Warbash and Illinois, Paterson, NJ	26-02-622	200	6	none			Crown Roll Leaf INC	BrunSH	poor		80	4	100	0.80	Rinbrand Well -2.716	3.0604	4.097
26-112	NE Corner Jewel/Penna, Paterson, NJ	26-02-623	447	10	unknown			Degen Elec. Co.				75	1	65	1.15	Henry A. Kieff-2.522	3.0604	3.971
26-5239	165 Gould Ave., Paterson, NJ	26-02-624	200	8	none		Refus	Augsburger Tool & Die Co.	BrunSH	yes		100	1.5	8	12.50	W. Bethere Well -2.91	2.8127	4.047
26-5240	165 Gould Ave., Paterson, NJ	26-02-624	200	8	none		COOL	Augsburger Tool & Die Co.	BrunSH	yes		100	2	12	8.33	W. Bethere Well -2.91	2.8127	4.047
26-3345	264 Wabash Ave., Paterson, NJ	26-02-624	140	6	unknown		IND	Peter Garofano & Son, INC	BrunSH	poor		201	3		ERR	Burrows Well D -2.91	2.8127	4.047
26-4244	87-89 Illinois Ave, Paterson, NJ	26-02-625	125	6	unknown		DOM	R & R Lumber Co.	BrunSH	OK		30				Joe C. Mautach-2.716	2.8127	3.909
26-5127	West Hazel Road, Clifton, NJ	26-02-626	215	8	none		COOL	A.G.L. Welding Supply Co.		no		65	6	80	0.81	Rinbrand Well -2.522	2.8127	3.777
26-2057	177 Gammon Ave, Paterson, NJ	26-02-627	280	8	unknown		COOL	Manhattan Coating Co.	BrunSH	poor		150	8	75	2.00	Rinbrand Well -2.91	2.5570	3.873
26-20??	85 Third St., Clifton, NJ	26-02-627	600	8	none		IND	Fritsche Brothers	BrunSH	poor		210	8	175	1.20	Rinbrand Well -2.91	2.5570	3.873
26-2116	50 California Ave., Paterson, NJ	26-02-627	300	8	unknown		COOL	Colorite Plastic of N.J. INC	BrunSH	poor		254	8	50	5.08	Rinbrand Well -2.91	2.5570	3.873
26-4220	73-75 Columbia Ave, Paterson, NJ	26-02-628	105	6	none		IND	Cherry Hill Bus Co.	BrunSH	poor		40			ERR	Joe C. Mautach-2.716	2.5570	3.730
26-4960	Buffalo Ave., Paterson, NJ	26-02-628	180	6	none		IND	Sea Breeze Products Co.		OK		65	1	17	3.82	W. Bethere Well-2.716	2.5570	3.730
26-755	107 Alabama Ave., Paterson, NJ	26-02-633	402	8	none			Independence Plating Co.		no		230	8	45	5.11	Henry A. Kieff -1.94	3.0604	3.630
26-4779	Wabash & Illinois Ave., Paterson, NJ	26-02-634	200	6	none		COOL	Crown Roll Leaf INC	BrunSH	poor		75	4	100	0.75	Rinbrand Well -2.328	2.8127	3.651
26-831	Rifle Camp Road, W. Paterson, NJ	26-02-645	150	6	none			Helen W. Gerlich		no		3	1	142	0.02	Henry A. Kieff-1.298	2.0456	3.880
26-902	244 Hazel Rd. Clifton, NJ	26-02-645	307	8	unknown		IND	F.E.R. Realty Co. INC	BrunSH	poor		300	8	70	4.29	Burrows Well D-1.298	2.0456	3.880
26-216	Hazel Rd., Clifton, NJ	26-02-648	202	8	none		DAIRY	Smith's Dairy		no		60	5	13	4.62	Henry A. Kieff-1.298	1.7899	3.752
26-3545	73 Rollins Ave., Clifton, NJ	26-02-648	144	6	unknown		DOM	N. Giordano	BrunSH	poor		27	2	40	0.68	Harry Ammeraal-1.298	1.7899	3.752
26-4504	35 Hennigan St., Clifton, NJ	26-02-649	200	6	none		COOL	Edmar Creations INC	BrunSH	poor		24	4	96	0.25	Rinbrand Well -1.104	1.7899	3.583
26-184	241 W. 2nd St., Clifton, NJ	26-02-651	115	6	unknown		Constr	White Seal Brick Co.		no		32	1	6	5.33	Water Wells SW -2.91	2.3013	3.710
26-4223	151 Crooks Ave, Paterson, NJ	26-02-652	120	6	none		IND	Separate Sanitary Laund.	BrunSH	poor		75			ERR	Joe C. Mautach-2.716	2.3013	3.509
26-3321	Getty Ave., Clifton, NJ	26-02-652	105	6	unknown		IND	Donald Pluby	BrunSH	poor		20	1	61	0.33	Mahny Brothers-2.716	2.3013	3.509
26-3764	265 Vernon Ave., Paterson, NJ	26-02-656	120	6	unknown			Mr. Salvator De Bario		no		10			ERR	Allan C. McCan-2.522	2.0456	3.247
26-4290	5 Wellington St., Clifton, NJ	26-02-656	300	6	unknown		COOL	Alfred Weller Heat	BrunSH	poor		65	4	5	13.00	Algeier Bros. -2.522	2.0456	3.247
26-7237	150 Paulentson St., Passaic City, NJ	26-02-656	500	6	unknown		PORL	Wirth, Rabbi	BrunSH	poor		30			ERR	William Stothe-2.522	2.0456	3.247
26-3307	417 Grove St., Clifton, NJ	26-02-657	372	6	unknown		DOM	J. Rilkin	BrunSH	poor		35	1	230	0.15	Mahny Brothers -2.91	1.7899	3.416
26-3479	47 Maple Ave., Clifton, NJ	26-02-657	150	6	unknown		DOM	George Van Varick	BrunSH	poor		40	4	20	2.00	Rinbrand Well -2.91	1.7899	3.416
26-5103	521 Highland Ave., Clifton, NJ	26-02-659	165	6	none		DOM	Dreajectie		no		50	2	40	1.25	Slater Bros. W-2.522	1.7899	3.092
26-3883	64 E. 8th St., Clifton, NJ	26-02-663	65	6	unknown		DOM	Antony Alessi	gravel	poor	?		6	40	ERR	John Lauritsen -1.94	2.3013	3.009
26-2678	101 Clifton Blvd., Clifton, NJ	26-02-665	173	6	unknown		IND	Allied Distilled Water		no					ERR	D.F. Well Dril-2.136	2.0456	2.956
26-1343	193 Arlington Ave., Clifton, NJ	26-02-668	300	8	unknown		COOL	Takamine Laboratory	BrunSH	poor			8	110	0.00	Burrows Well D-2.136	1.7899	2.785
26-3033	Hamilton Ave., Clifton, NJ	26-02-668	300	12	unknown		TEST	Miles Chemical Co.	BrunSH	poor		214	71	125	1.71	Burrows Well D-2.136	1.7899	2.785
26-4613	193 Arlington Ave., Clifton, NJ	26-02-668	408	12	none		IND	Miles Laboratories INC	BrunSH	poor		180	24	143	1.26	Rinbrand Well -2.136	1.7899	2.785
26-3019	157 Rutgers Place, Clifton, NJ	26-02-669	120	6	unknown		DOM	Mr. Herman Hansen		no		20	10	100	0.20	John Lauritsen -1.94	1.7899	2.639
26-3610	119 Holster Rd., Clifton, NJ	26-02-669	150	6	unknown		DOM	Joseph Emma		no		20	6	120	0.17	John Lauritsen -1.94	1.7899	2.639
26-1065	697 Route 046, Clifton, NJ	26-02-671	300	10	unknown		IND	Shelton INC	BrunSH	poor		435	8	142	3.06	Sam Hechorson -1.492	1.5342	3.014
26-5035	25 Styertown Rd., Clifton, NJ	26-02-671	285	10	unknown		IND	Yeast Products	BrunSH	poor		400	1	70	5.71	Samuel Stothof-1.492	1.5342	3.014
26-3702	35 Parkway Ave, Clifton, NJ	26-02-671	125	6	unknown		DOM	James Cannizzo	BrunSH	poor		20	1	42	0.48	Mahny Brothers-1.492	1.5342	3.014
26-3386	27 Nottingham Terrace, Clifton, NJ	26-02-673	270	6	unknown		DOM	Harry Buras	BrunSH	poor		15	1	92	0.16	Mahny Brothers-1.104	1.5342	3.462
26-9062A	Grove St., Clifton, NJ	26-02-673	200	6	unknown		DOM	Mr. Charles Hares		no		50	6	200	0.25	John Lauritsen-1.104	1.5342	3.462
26-425	555 McBride Ave., W. Paterson, NJ	26-02-675	60	6	unknown		IND	McBride Auto Body Service		no		5	2	47	0.11	John Lauritsen-1.298	1.2785	3.537
26-2021	Route 046, Clifton, NJ	26-02-675	400	10	none		COOL	Shelton INC	BrunSH	poor		190	8	175	1.13	Rinbrand Well -1.298	1.2785	3.537

ID#	ADDRESS	LOWDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
26 1172	Clifton, NJ	26-02-676	389	12	unknown		IND	Athenia Steel Co.	BrunSH	OK		330	11	56	5.89	Wm. Stothoff		-3.104	1.2785	3.356
26-2979	Route 046, Clifton, NJ	26-02-676	300	10	none		COOL	Shulton INC	BrunSH	poor		322	8	180	1.79	Rinbrand Well		-3.104	1.2785	3.356
26 3888	67 Marconi St., Clifton, NJ	26-02-677	105	6	unknown		DOM	Mrs. Barbara Kater	BrunSH	poor		10	1	36	0.28	Mabey Brothers		-3.492	1.0228	3.638
26 3218	10 Pilgrim Dr., Clifton, NJ	26-02-677	100	6	unknown		DOM	Charles Lay	BrunSH	poor		25	1	22	1.14	Mabey Brothers		-3.492	1.0228	3.638
26 6282	Clifton, NJ	26-02-679	450	12	none		IND	Nat'l. Std. Co., Athenia Steel	BrunSH	OK		205	8	130	1.58	Wm. Stothoff		-3.104	1.0228	3.268
26 4285	67 Maple Pl., Clifton, NJ	26-02-683	120	6	none		DOM	Mr. Bernhard S. Brank	BrunSH	poor		20	3	85	0 24	Ackerman Well		-2.522	1.5342	2.951
26 1951	791 Paulson Ave, Clifton, NJ	26-02-687	60	12	15		IND	Eureka Printing Co.	BrunSH	poor		282	8	36	7 83	Burrows Well D		-2.91	1.0228	3.084
26-110	Highland Ave., Clifton, NJ	26-02-688	400	10	none		IND	Federal Sweets and Biscuit Co.	BrunSH	poor		280	8	105	2.67	Rinbrand Well		-2.716	1.0228	2.902
26-854	Clifton, NJ	26-02-693	250	8	unknown		IND	Cosley and Co.	BrunSH	poor		105			ERR	Rinbrand Well		-1.94	1.5342	2.473
26 4669	165 Knapp Ave., Clifton, NJ	26-02-693	68	6	unknown		DOM	Mr. Walter Paleniak		no		10	24	20	0.50	Soren Nelson J		-1.94	1.5342	2.473
26 5341	761 Bloomfield Ave., Clifton, NJ	26-02-695	22.5	4	20	PVC	OBS	EXXON	BrunSH	good					ERR	Handex Corp.		-2.134	1.2785	2.487
26-5342	761 Bloomfield Ave., Clifton, NJ	26-02-695	22.5	4	20	PVC	OBS	EXXON	BrunSH	good					ERR	Handex Corp.		-2.134	1.2785	2.487
26 5343	761 Bloomfield Ave., Clifton, NJ	26-02-695	23	4	20	PVC	OBS	EXXON	BrunSH	good					ERR	Handex Corp.		-2.134	1.2785	2.487
26-3195	625 Main Ave., Passaic, NJ	26-02-9??	205	8	none		COOL	North Jersey Savings and Loan	BrunSH	poor		50	8	55	0 91	Rinbrand Well		-3.492	-1.278	3.718
26-3707	327 High St., Passaic, NJ	26-02-9??	75	6	unknown		DOM	Martha Const. Co.	BrunSH	poor		10	3	5	2 00	Rinbrand Well		-3.492	-1.278	3.718
26 3467	110 Washington Ave., Clifton, NJ	26-02-9??	170	6	unknown		DOM	Dr. L.P. Duca	BrunSH	poor		30	3	15	2 00	Rinbrand Well		-3.492	-1.278	3.718
26 1886	Maboro St. Clifton, NJ	26-02-919	333	8	unknown		COOL	Glopro Realty Co., INC	BrunSH	poor		92	8	122	0 75	Rinbrand Well		-3.104	0.2557	3.114
26-3349	12 Haman St., Clifton, NJ	26-02-921	150	6	unknown		DOM	Thaddeus Sokelski	BrunSH	poor		20	2	38	0.53	Harry Ammraal		-2.91	0.7671	3.009
26-421	225 Clifton Blvd., Clifton, NJ	26-02-922	605	10	unknown		IND	Texstyle Corp.	BrunSH	poor		250			ERR	Rinbrand Well		-2.716	0.7671	2.822
26-1059	Lot 152A, Sargent Ave?, Clifton, NJ	26-02-925	400	10	unknown		IND	Standard Packaging Corp.	BrunSH	poor		190	8	230	0.83	Rinbrand Well		-2.716	0.5114	2.763
26-1060	Sargent Ave., Clifton, NJ	26-02-925	400	10	unknown			Standard Packaging Corp.	BrunSH	poor		190	8	253	0.75	Rinbrand Well		-2.716	0.5114	2.763
26 172	823, Clifton, NJ	26-02-926	200	8	unknown		A/C	Oneida Paper Products, INC	BrunSH	poor		100	8	57	1.75	Wm. J. Sikkema		-2.522	0.5114	2.573
26-3411	425 Grove St., Clifton, NJ	26-02-927	250	6	unknown		DOM	Dr. T. Sicilicin	BrunSH	poor		50	1	82	0.61	Mabey Brothers		-2.91	0.2557	2.921
26-3504	4 Speer Ave., Passaic, NJ	26-02-929	108	6	unknown		IRR	Arthur Mecklenburg	BrunSH	poor		20	2	32	0 63	Frank Bott, III		-2.522	0.2557	2.534
26 6106	710 Van Houten Ave., Clifton, NJ	26-02-929	265	6	none		IND	Mario's Friendly Restaurant		no		50	4	35	1 43	Slater Bros. W		-2.522	0.2557	2.534
26-602	338 Chestnut Ave., Passaic, NJ	26-02-933	200	6	unknown		A/C	Dinn's Trucking Co.	BrunSH	poor		10	4	41	0 24	Burrows Well B		-1.94	0.7671	2.086
26-5011	1 Clifton Blvd., Clifton, NJ	26-02-934	300	8	unknown		IND	Swipes Tube Corp.	BrunSH	poor		200	1	145	1 38	Samuel Stothof		-2.328	0.5114	2.383
26-3941	Van Houten Ave., Passaic, NJ	26-02-937	242	8	unknown			Raybestos Manhattan, INC	BrunSH	poor		7.5		62	0 12	Frank Bott, III		-2.328	0.2557	2.342
26-2012	85 Third St., Clifton, NJ	26-02-937	600	8	none		IND	Fritzche Brothers	BrunSH	poor		210	8	175	1.20	Rinbrand Well		-2.328	0.2557	2.342
26 6142	307 Broadway, Passaic, NJ	26-02-939	26.5	7	15' x 4'	PVC	OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26 6147	307 Broadway, Passaic, NJ	26-02-939	28	8	22' x 4'	PVC	OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26-6148	307 Broadway, Passaic, NJ	26-02-939	39	8	none		OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26 6149	307 Broadway, Passaic, NJ	26-02-939	29	8	12' x 4'	PVC	OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26 6204	307 Broadway, Passaic, NJ	26-02-939	29.5	7	20' x 4'	PVC	OBS	Shell Oil Co.	BrunSH	good					ERR	Handex Corp.		-1.94	0.2557	1.956
26-3679	391 Main Ave., Clifton, NJ	26-02-942	135	6	unknown			Mr. Sal Calderaro		no		35			ERR	Allan C. McCon		-3.298	0	3.298
26-448	Minnisink Road, Totowa, NJ	26-02-953	32	6	unknown		DOM	Sisco INC		no		9	2	15	0 60	John Lauritsen		-2.522	0	2.522
26-3413	95 Howard Ave., Clifton, NJ	26-02-953	210	6	unknown		DOM	Michael Kalinesak	BrunSH	poor		50	1	64	0.78	Mabey Brothers		-2.522	0	2.522
26-3590	19 Orth Ave., Passaic, NJ	26-02-955	120	6	unknown			Leroy Zeyer		no		30			ERR	Allan C. McCon		-2.716	-0.255	2.728
26-3195	625 Main Ave., Passaic, NJ	26-02-957	205	8	none		COOL	North Jersey Savings and Loan	BrunSH	poor		50	8	55	0.91	Rinbrand Well		-2.91	-0.511	2.954
26-3589	482 Passaic Ave., Passaic, NJ	26-02-957	125	6	unknown			Mr. N. Martini		no		80			ERR	Aaron Slater,		-2.91	-0.511	2.954
26-2231	443 Van Houten Ave., Passaic, NJ	26-02-961	500	8	unknown		IND	Speedway Car Wash Co.	BrunSH	poor		80		288	0.28	Rinbrand Well		-2.328	0	2.328
26 3323	16 Garfield St., Passaic, NJ	26-02-962	186	6	unknown		DOM	William Toth	BrunSH	poor		40	1	112	0.36	Mabey Brothers		-2.134	0	2.134
26-328	Van Houten & Broadway, Passaic, NJ	26-02-966	292	8	unknown		A/C	Guarantee Food Market	BrunSH	poor		60	8	50	1.20	Rinbrand Well		-1.94	-0.255	1.956
26-3096	199 N. Saddle Brook Rd., Hohokus, NJ	26-02-968	135	6	none		DOM	Mr. William Troast	BrunSH	poor		30	4	15	2.00	Rinbrand Well		-2.134	-0.511	2.194
26-3614	350 Blvd., Passaic, NJ	26-02-968	300	6	none		DOM	Passaic General Hospital	BrunSH	poor		15	8	275	0.05	Rinbrand Well		-2.134	-0.511	2.194
26-3589	482 Passaic Ave., Passaic, NJ	26-02-972	125	6	unknown			Mr. N. Martini		no		80			ERR	Aaron Slater,		-3.298	-0.767	3.386
26-3935	600 Route 46, Clifton, NJ	26-02-972	185	6	unknown			Fenelon Properties		no		50			ERR	Allan C. McCon		-3.298	-0.767	3.386
26 2407	750 Bloomfield Ave., Clifton, NJ	26-02-973	305	10	unknown		IND	Allen B. Dumont Laboratories	BrunSH	poor		33		104	0.32	Rinbrand Well		-3.104	-0.767	3.197
26-1558	Allwood Rd., Clifton, NJ	26-02-973	360	10	unknown		IND	Albert A. Stier	BrunSH	poor		375		180	2.08	Rinbrand Well		-3.104	-0.767	3.197
26-2567	Bloomfield Ave., Clifton, NJ	26-02-973	301	8	unknown		IND	Brooklift Realty Co.	BrunSH	poor		190	6	54	3.52	Frank J. Bott		-3.104	-0.767	3.197
26 ??47	451 Ninth Ave., Clifton, NJ	26-02-975	190	6	unknown		DOM	Luca and Vreeland		no				1	0.00	N. Jersey Arte		-3.298	-1.022	3.452
26 268	100 Bloomfield Ave., Clifton, NJ	26-02-976	350	10	unknown		COOL	Albert A. Stier, INC	BrunSH	poor		400	8	65	6.15	Rinbrand Well		-3.104	-1.022	3.268
26 3371	86 Beech St., Bloomfield, NJ	26-02-978	150	6	unknown		DOM	Mr. Eugene Nehrhof	BrunSH	poor		20		130	0.15	John Lauritsen		-3.298	-1.278	3.537

163

ID#	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLERCOMMENT	X	Y	DIST
26 3213	35 Virginia Ave., Clifton, NJ	26-02-978	185	6	unknown		DOM	Mr. R.E. Boreman	BrunSH	poor		30	4	20	1.50	Rinbrand Well	-3.298	-1.278	3.537
26 3211	Clifton Blvd., Clifton, NJ	26-02-981	270	8	unknown		COOL	Mycalex Corp. of America	BrunSH	poor		60	6	15	4.00	Rinbrand Well	-2.91	-0.767	3.009
26 3667	98 Virginia Ave., Clifton, NJ	26-02-985	220	6	unknown			Mr. Robert Kaufman		no		20			ERR	Allan C. McCon	-2.716	-1.022	2.902
26 659	60 Clifton Blvd., Clifton, NJ	26-02-988	360	10	unknown		IND	Federal Sweets & Biscuit Co.	BrunSH	poor					ERR	Rinbrand Well	-2.716	-1.278	3.001
26 3862	180 Chittenden Rd., Clifton, NJ	26-02-993	260	6	unknown			Mr. Robert DeMossi	BrunSH	no		45			ERR	Allan C. McCon	-1.94	-0.767	2.086
26 3844	52 Cherry St., Clifton, NJ	26-02-999	55	6	unknown		DOM	Stephen Pirone	BrunSH	OK		10	2	45	0.22	David Nelson	-1.94	-1.278	2.323
26 3410	Passaic and Marsellina Place, Passaic, NJ	26-03-4??	130	6	unknown		DOM	Most Holy Name Church		no		40		10	4.00	Ray Bess	-1.746	1.0228	2.023
26 700	River Dr., E. Paterson, NJ	26-03-412	330	8	unknown			Mr. O. Vlomynck	BrunSH	poor		10	8	160	0.06	Rinbrand Well	-1.552	3.0604	3.438
26 295	826, E. Paterson, NJ	26-03-416	134	6	unknown		DOM	Colon Const. Co.	BrunSH	poor		21	0.5	14	1.50	Wm. J. Sibbens	-1.358	2.8127	3.123
26 1097	Rt. 46, E. Paterson, NJ	26-03-416	125	6	unknown		A/C	Ross Diner		no		40	4		ERR	J. Foster	-1.358	2.8127	3.123
26 4996	85 Rt. 46 West (Jessie's Exxon)	26-03-417	18	4	4" X 15'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26 4997	85 Rt. 46 West (Jessie's Exxon)	26-03-417	18	4	4" X 15'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26 4998	85 Rt. 46 West (Jessie's Exxon)	26-03-417	18	4	4" X 15'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26-4999	85 Rt. 46 West (Jessie's Exxon)	26-03-417	20	4	4" X 20'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26 5000	85 Rt. 46 West (Jessie's Exxon)	26-03-417	20	4	4" X 20'	PVC	OBS	EXXON USA	gravel	good					ERR	Handex Corp.	-1.746	2.5570	3.096
26-4850	901 River Ave., Elmwood Park, NJ	26-03-418	120	6	unknown		DOM	Stefan Petryzyn	BrunSH	OK		30	5	7	4.29	Soren Nelson J	-1.552	2.5570	2.991
26 3548	161 Stafanic Ave., E. Paterson, NJ	26-03-422	100	6	unknown		DOM	Salvatore Sergi	BrunSH	poor		40	2	5	8.00	Frank Bott, III	-0.97	3.0604	3.218
26-3755	114 Jewel St., Garfield, NJ	26-03-423	85	6	unknown		DOM	Matilde Bruno		no		16	8	40	0.40	John Lauritsen	-0.776	3.0604	3.165
26 5874	Boulevard & Market St., Elmwood Park, NJ	26-03-423	16	4	4" X 10'	PVC	OBS	Texaco	sand	poor					ERR	Handex Corp.	-0.776	3.0604	3.165
26-5875	Boulevard & Market St., Elmwood Park, NJ	26-03-423	17	4	4" X 10'	PVC	OBS	Texaco	sand	poor					ERR	Handex Corp.	-0.776	3.0604	3.165
26-5876	Boulevard & Market-St., Elmwood Park, NJ	26-03-423	16	4	4" X 10'	PVC	OBS	Texaco	sand	poor					ERR	Handex Corp.	-0.776	3.0604	3.165
26-5877	Boulevard & Market St., Elmwood Park, NJ	26-03-423	16.5	4	4" X 10'	PVC	OBS	Texaco	sand	poor					ERR	Handex Corp.	-0.776	3.0604	3.165
26 3257	36 Rellport Pl., Garfield, NJ	26-03-423	65	6	unknown		DOM	George Stefanco		no		30		30	1.00	John Lauritsen	-0.776	3.0604	3.165
26 3767	42 Linwood Ave., E. Paterson, NJ	26-03-424	135	6	unknown		DOM	Charles Fournier		no		15	8	30	0.50	John Lauritsen	-1.164	2.8127	3.044
26 3546	401 Madeline Ave., Garfield, NJ	26-03-425	70	6	unknown		DOM	Louis Shaminski	BrunSH	poor		15	2	8	1.88	Frank J. Bott	-0.97	2.8127	2.975
26-2112	81 Fifth St., Saddle Brook, NJ	26-03-426	200	10	unknown		IND	Amloid Co.	BrunSH	poor		66	8	111	0.59	Burrows Well D	-0.776	2.8127	2.917
* 26-931	Market St. & Railroad, E. Paterson, NJ	26-03-426	200	6	unknown		Public	Borough of E. Paterson	BrunSH	poor		180	8	75	2.40	Rinbrand Well	-0.776	2.8127	2.917
26 242?	23 Rt. 24, E. Paterson, NJ	26-03-427	165	6	unknown		DOM	Mahank Motors	BrunSH	poor		30	1	45	0.67	Wm. J. Sibbens	-1.164	2.5570	2.809
26 195	891 River Rd., E. Paterson, NJ	26-03-428	180	6	unknown		?	Mr. Wayne Harper	BrunSH	poor		10		?	ERR	Rinbrand Well	-0.97	2.5570	2.734
26 3672	398 Grace Ave., Garfield, NJ	26-03-429	76	6	unknown		DOM	Peter Shaminski	BrunSH	poor		15	2.5	7.5	2.00	Frank Bott, III	-0.776	2.5570	2.672
26 3248	396 Grace Ave., Garfield, NJ	26-03-429	63	6	unknown		DOM	Stanley Wadecki	BrunSH	poor		40	2	5	8.00	Harry Ammeraal	-0.776	2.5570	2.672
26 5037	475 Boulevard, Elmwood Park, NJ	26-03-433	250	8	unknown		IND	P.R.C. Corp.	sand	poor		70	2	68	1.03	Glenn Slater	-0.194	3.0604	3.074
26-3801	53 Linden Ave., E. Paterson, NJ	26-03-435	100	6	unknown		DOM	Louis German		no		10		30	0.33	John Lauritsen	-0.388	2.8127	2.839
26-703	147 5th St., Saddle River, NJ	26-03-435	150	6	unknown		IND	Hymmy Cinder Block		no		50	4	10	5.00	Foster Well Dr	-0.388	2.8127	2.839
26-476	6 Echo Pl., E. Paterson, NJ	26-03-435	100	6	unknown		DOM	Frank Georgi	BrunSH	poor		20			ERR	Georgi Brother	-0.388	2.8127	2.839
26 2112	81 Fifth St., Saddle Brook, NJ	26-03-436	200	10	unknown		IND	Amloid Co.	BrunSH	poor		66	8	111	0.59	Burrows Well D	-0.194	2.8127	2.819
26 3552	64 Pacific Ave., Garfield, NJ	26-03-437	62	6	unknown		DOM	Alex Domonkos		no		20	6	30	0.67	John Lauritsen	-0.582	2.5570	2.622
26-730	5th St., Rochelle Park, NJ	26-03-437	6	6	unknown		COOL	Amloid Plastics Co.		no		35	4	21	1.67	Foster	-0.582	2.5570	2.622
26-3800	175 Franklin St., E. Paterson, NJ	26-03-438	65	6	unknown		DOM	Mr. Leonard Widovic		no		30	24	40	0.75	John Lauritsen	-0.388	2.5570	2.586
26-3670	384 Madeline Ave., Garfield, NJ	26-03-438	70	6	unknown		DOM	Eugine Majdanski	BrunSH	poor		60	2	2	30.00	Frank Bott, III	-0.388	2.5570	2.586
26-3550	125 Autwater Lane, Garfield, NJ	26-03-438	200	6	unknown		DOM	Carmine T. Perrapto		no		?		30	ERR	John Lauritsen	-0.388	2.5570	2.586
26-5516	Pavan's Exxon, River Rd., Clifton, NJ	26-03-447	25	4	4" X 10'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	-1.746	1.7899	2.500
26-5517	Pavan's Exxon, River Rd., Clifton, NJ	26-03-447	25	4	4" X 10'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	-1.746	1.7899	2.500
26-5439	Pavan's Exxon, River Rd., Clifton, NJ	26-03-448	25	4	4" X 15'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	-1.552	1.7899	2.369
26-5440	Pavan's Exxon, River Rd., Clifton, NJ	26-03-448	30	4	4" X 20'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	-1.552	1.7899	2.369
26-617	Rt. 4, E. Paterson, NJ	26-03-4??	120	6	unknown		DOM	George Kaminsky	BrunSH	poor		18	4	15	1.20	J. Foster	-1.746	1.0228	2.023
26 4555	10 Stefanic Ave., E. Paterson, NJ	26-03-452	477	6	none		IND	Empire Overall		no		55			ERR	Jos. C. Haerts	-0.97	2.3013	2.497
* 26-4063	Midland Ave., Garfield, NJ	26-03-453	475	10	none		Public	City of Garfield	BrunSH	poor		77	33	249	0.31	Rinbrand Well	-0.776	2.3013	2.428
26 3775	Cedar St. & Botany, Garfield, NJ	26-03-453	160	6	unknown		DOM	Mr. Andrew Gretchen		no		20	12	15	1.33	John Lauritsen	-0.776	2.3013	2.428
26 2880	221 Banta Ave., Garfield, NJ	26-03-455	190	6	none		COOL	Stull Engraving Co.	BrunSH	poor		45	3	96	0.47	Ernest S. Rich	-0.97	2.0456	2.263
26 4101	221 Banta Ave., Garfield, NJ	26-03-455	375	6	none		COOL	Stull Engraving Co.	BrunSH	poor		35	3	254	0.14	Ernest S. Rich	-0.97	2.0456	2.263
26 4276	221 Banta Ave., Garfield, NJ	26-03-455	397	6	none		COOL	Stull Engraving Co.	BrunSH	poor		55	3	224	0.25	Ernest S. Rich	-0.97	2.0456	2.263
* 26 4016	Midland Ave, Garfield, NJ	26-03-456	400	10	none		Public	City of Garfield	BrunSH	poor		320	36	83	3.95	Rinbrand Well	-0.776	2.0456	2.187

164

IDO	ADDRESS	LOROS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLERCOMMENT	X	Y	DIST
* 26 4017	Outwater La. at Railroad, Garfield, NJ	26-03-456	710	10	none		Public	City of Garfield		no		30	?	290	0.10	Rinbrand Well	-0.776	2.0456	2.187
26 1314	1 Arkerman Ave. (Chlorine Bldg), Clifton,	26-03 457	250	8	none		DOM	Whippany Paper Bd. Co.		no		312	8	89	3.51	Henry A. Kieff	-1.164	1.7899	2.135
26 3721	311 Passaic St., Garfield, NJ	26-03-461	63	6	unknown		DOM	Tom Grisco		no		15	8	20	0.75	John Lauritsen	-0.582	2.3013	2.373
26 3611	2 Bark St., Paterson, NJ	26-03-464	100	6	unknown		DOM	Joseph Bomonbos	BrunSH	poor		20	5	50	0.40	John Lauritsen	-0.582	2.0456	2.126
26 3776	6 Oak St., E. Paterson, NJ	26-03-464	100	6	unknown'		DOM	Mr. Pat Puglice		no		?	?	?	ERR	John Lauritsen	-0.582	2.0456	2.126
26 660	541 Midland Ave., Garfield, NJ	26-03-466	275	8	unknown		IND	Joseph Reis	BrunSH	poor		50	6	155	0.32	Rinbrand Well	-0.194	2.0456	2.054
26 1646	55 Clifton Ave., Clifton, NJ	26-03-472	120	6	unknown		A/C	New Apostolic Church	BrunSH	poor		25		0	ERR	Burrows Well D	-1.552	1.5342	2.182
26 4009	Fleischer's Break - Botany Rd., Garfield,	26-03-483	400	10	unknown		TEST	City of Garfield	BrunSH	OK		25	2	95	0.26	Burrows Well D	-0.776	1.5342	1.719
26-3609	600 Midland Ave., Garfield, NJ	26-03-486	110	6	unknown		DOM	Dr. Daniel Conte	BrunSH	poor		30	6	15	2.00	John Lauritsen	-0.776	1.2785	1.495
26 14	15 Mattimore St., Passaic, NJ	26-03-488	501	8	none		COOL	Arrow Plastics Corp.	gravel	poor		50	16	110	0.45	Rinbrand Well	-0.97	1.0228	1.409
26-5149	Grand & Cambridge St., Garfield, NJ	26-03-489	21	26	26" X 17'	steel	Gasoline	NJ DEP-Div Hazard. Subst.	sand	poor					ERR	Handex Corp.	-0.776	1.0228	1.283
26-4010	Grand St., Garfield, NJ	26-03-489	276	10	none			City of Garfield	BrunSH	OK					ERR	Burrows Well D	-0.776	1.0228	1.283
26 6602	125 Clark St., Garfield, NJ	26-03-494	19.5	4	4" X 19.5'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	A.C. Schultes	-0.582	1.2785	1.404
26 6544	125 Clark St., Garfield, NJ	26-03-495	19	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26-6545	125 Clark St., Garfield, NJ	26-03-495	19	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26 6546	125 Clark St., Garfield, NJ	26-03-495	17	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26 6547	125 Clark St., Garfield, NJ	26-03-495	17	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26 6548	125 Clark St., Garfield, NJ	26-03-495	18	4	4" X 10'	PVC	OBS	E.C. Electroplating	BrunSH	good					ERR	Handex Corp.	-0.388	1.2785	1.336
26 3577	44 Pellport Pl., Garfield, NJ	26-03-497	100	6	unknown		DOM	Mr. Carmine T. Perrapato		no		?	6	15	ERR	John Lauritsen	-0.582	1.0228	1.176
26 6184	100 W. Hunter Ave., Maywood, NJ	26 03-5??	16	6	6" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26 6185	100 W. Hunter Ave., Maywood, NJ	26-03-5??	20	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26 6186	100 W. Hunter Ave., Maywood, NJ	26-03-5??	14	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26 6187	100 W. Hunter Ave., Maywood, NJ	26-03-5??	17.5	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26 6188	100 W. Hunter Ave., Maywood, NJ	26-03-5??	11	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26 6189	100 W. Hunter Ave., Maywood, NJ	26-03-5??	9	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26 6190	100 W. Hunter Ave., Maywood, NJ	26-03-5??	8.5	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26 6191	100 W. Hunter Ave., Maywood, NJ	26-03-5??	8	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26-6192	100 W. Hunter Ave., Maywood, NJ	26-03-5??	4	4	4" X 10'	unknown		Stepan Chemical Co.	sand	OK					ERR	Warren George,	0	1.0228	1.022
26 610	169 Millbank St., Lodi, NJ	26-03-5??	150	6	unknown			Mathe Chemical		no		70	8	8	8.75	Foster Well Dr	0	1.0228	1.022
26 4003	400 Dewey Ave., Saddle Brook, NJ	26-03-511	100	6	unknown		DOM	Stephen J. Hrubec	BrunSH	poor		35	2	13	2.69	Frank Bott, IN	0	3.0684	3.068
26 3855	9th St., Saddle Brook, NJ	26-03-517	93	6	unknown		DOM	Mr. Stephen Thompson		no		?	?	?	ERR	John Lauritsen	0	2.5570	2.557
26 4494	81 5th St., Saddle Brook, NJ	26-03-517	250	6	none		IND	Plastic Toys, INC	BrunSH	poor		75			ERR	Jos. C. Harris	0	2.5570	2.557
26-294	826, Rochelle Park, NJ	26-03-517	80	6	unknown		DOM	Colon Const. Co.	BrunSH	poor		30	2	0	ERR	Wm. Sikkema	0	2.5570	2.557
* 26 4905	Smith Elem. Sch., Cambidge Ave., Saddle Br	26-03-518	200	6	none		Public	Board of Educ., Twp. of Saddle B	BrunSH	OK		33.5	4	29.4	1.14	New Jersey Dri	0.194	2.5570	2.564
26 6967	660 Main St., Lodi, NJ	26-03-523	18	4	4" X 15'	PVC	OBS	Solar Oil	BrunSH	good					ERR	Handex Corp.	0.97	3.0684	3.218
26 6968	660 Main St., Lodi, NJ	26-03-523	14	4	4" X 10'	PVC	OBS	Solar Oil	BrunSH	good					ERR	Handex Corp.	0.97	3.0684	3.218
26 6969	660 Main St., Lodi, NJ	26-03-523	17	4	4" X 14'	PVC	OBS	Solar Oil	BrunSH	good					ERR	Handex Corp.	0.97	3.0684	3.218
26-6970	660 Main St., Lodi, NJ	26-03-523	12	4	4" X 10'	PVC	OBS	Solar Oil	BrunSH	good					ERR	Handex Corp.	0.97	3.0684	3.218
26-5888	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunSH	good					ERR	Handex Corp.	0.97	2.8127	2.975
26-5889	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunSH	good					ERR	Handex Corp.	0.97	2.8127	2.975
26 5890	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunSH	good					ERR	Handex Corp.	0.97	2.8127	2.975
26 5891	68 Essex St., Lodi, NJ	26-03-526	20	4	4" X 10'	PVC	OBS	Texaco, INC	BrunSH	good					ERR	Handex Corp.	0.97	2.8127	2.975
26 5523	460 N. Main St., Lodi, NJ	26-03-529	15	4	4" X 10'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	0.97	2.5570	2.734
26 5524	460 N. Main St., Lodi, NJ	26-03-529	15	4	4" X 10'	PVC	OBS	EXXON USA	BrunSH	good					ERR	Handex Corp.	0.97	2.5570	2.734
26-359	Woodland Ave. & Rt. 17, Rochelle Park, NJ	26-03-531	103	6	unknown		DOM	Metalfab	BrunSH	poor		40	2	2.5	16.00	Georgi Brother	1.164	3.0684	3.281
26 4949	Rt. 17 N., Maywood, NJ	26-03-531	19.5	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 4964	Rt. 17 N., Maywood, NJ	26-03-531	18	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 4965	Rt. 17 N., Maywood, NJ	26-03-531	17	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 4966	Rt. 17 N., Maywood, NJ	26-03-531	17	4	4" X 15'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 4967	Rt. 17 N., Maywood, NJ	26-03-531	20	4	4" X 13'	PVC	OBS	Gulf Oil Co.	BrunSH	good					ERR	Handex Corp.	1.164	3.0684	3.281
26 3936	107 Essex St., Maywood, NJ	26-03-532	196	6	unknown			Snappy Car Wash T/A Jax Car Wash	BrunSH	poor		20	2	31	0.65	B.F. Well Dril	1.358	3.0684	3.355
26 1925	48 Woodland Ave., Rochelle Park, NJ	26 03 535	100	6	unknown			Joseph Brizak	BrunSH	poor		10	2	15	0.67	Rinbrand Well	1.358	2.8127	3.123
26 2271	87 Rt. 17, Maywood, NJ	26 03 535	300	8	unknown		IND	Aquarium, INC	BrunSH	poor		172	8	43.5	3.95	Burrows Well D	1.358	2.8127	3.123

IDN	ADDRESS	LOROS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPE	DRAW	S'CAP	DRILLERCOMMENT	X	Y	DIST
26 4050	446 Saddle River Rd., Saddle Brook, NJ	26-03-537	67	6	unknown		DOM	Alexander Buday	BrunSH	poor		30	3	15	2.00	Pine Brook Wel	1.164	2.5570	2.809
26 1620	Lodi, NJ	26-03-538	403	12	unknown		???	Borough of Lodi	BrunSH	poor		600	24	110.9	5.41	Artesian Well	1.358	2.5570	2.895
26 5248	318 Seventh St., Saddle Brook, NJ	26-03-541	79	6	unknown		DOM	John Murdock	BrunSH	poor		35	2	10	3.50	E.S. Richardso	0	2.3013	2.301
26 5621	283 Outwater Ln., Saddle Brook, NJ	26-03-541	108	6	unknown		DOM	Ronaldo Clappina	BrunSH	poor		40	2	16	2.50	E.S. Richardso	0	2.3013	2.301
26 4064	Dolphin (Pulaski Pk.), Garfield, NJ	26-03-542	405	10	none		Public	City of Garfield	BrunSH	poor		405	72	199	2.04	Rinbrand Well	0.194	2.3013	2.309
26 640	249 St. Hy. 6, Saddle River, NJ	26-03-542	90	6	unknown		DOM	Paul Bianco		no		25	4	20	1.25	J. Foster	0.194	2.3013	2.309
26 3557	177 Market St., Garfield, NJ	26-03-542	95	6	unknown		DOM	Stanley Kobylarz		no		?	?	?	ERR	John Lauritsen	0.194	2.3013	2.309
26 628	Rt. 6, Saddle River Twp.	26-03-545	90	8	unknown		DOM	Leo Olho (Restaurant)	BrunSH	poor		60	4	2	30.00	J. Foster, Jr.	0.194	2.0456	2.054
26 7043	650 California St., Lodi, NJ	26-03-549	12		unknown		OBS	Hencel Corp.	sand	OK					ERR	Warren George,	0.388	1.7899	1.831
26 5217	200 Gregg St., Lodi, NJ	26-03-549	15	2	unknown		OBS	Inmont Corp.	gravel	good					ERR	Warren George,	0.388	1.7899	1.831
26 5218	200 Gregg St., Lodi, NJ	26-03-549	16	2	unknown		OBS	Inmont Corp.	gravel	good					ERR	Warren George,	0.388	1.7899	1.831
26 5219	200 Gregg St., Lodi, NJ	26-03-549	18	2	unknown		OBS	Inmont Corp.	gravel	good					ERR	Warren George,	0.388	1.7899	1.831
26 5220	200 Gregg St., Lodi, NJ	26-03-549	15	2	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5221	200 Gregg St., Lodi, NJ	26-03-549	104	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5222	200 Gregg St., Lodi, NJ	26-03-549	80	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5223	200 Gregg St., Lodi, NJ	26-03-549	55	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5224	200 Gregg St., Lodi, NJ	26-03-549	102	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5225	200 Gregg St., Lodi, NJ	26-03-549	71	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5226	200 Gregg St., Lodi, NJ	26-03-549	46	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5227	200 Gregg St., Lodi, NJ	26-03-549	102	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5228	200 Gregg St., Lodi, NJ	26-03-549	70	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5229	200 Gregg St., Lodi, NJ	26-03-549	45	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5230	200 Gregg St., Lodi, NJ	26-03-549	103	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5231	200 Gregg St., Lodi, NJ	26-03-549	71	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5232	200 Gregg St., Lodi, NJ	26-03-549	40	4	unknown		OBS	Inmont Corp.	BrunSH	good					ERR	Warren George,	0.388	1.7899	1.831
26 5233	200 Gregg St., Lodi, NJ	26-03-549	17	2	unknown		OBS	Inmont Corp.	till	good					ERR	Warren George,	0.388	1.7899	1.831
26 3184	Columbia Ave., Lodi, NJ	26-03-554	510	10	none		public	Lodi Dept. of Public Works	BrunSH	poor		100	24	182	0.55	Rinbrand Well	0.582	2.0456	2.126
26 3526	381 Samuel Ave., Garfield, NJ	26-03-557	115	6	unknown		DOM	Andrew Ziemtek		no		20	6	?	ERR	John Lauritsen	0.582	1.7899	1.882
26 3529	Samuel Ave., Garfield, NJ	26-03-556	140	6	unknown		DOM	Steve Kovacs, Sr.		no		20	8	50	0.40	John Lauritsen	0.97	2.0456	2.263
26 3527	212 Market St., Garfield, NJ	26-03-556	90	6	unknown		DOM	James V. Failla		no		25	8	50	0.50	John Lauritsen	0.97	2.0456	2.263
26 3579	165 Main St., Lodi, NJ	26-03-557	400	6	none		IND	Washine Chemical Co.	BrunSH	poor		100	1	399	0.25	Wm. Stothoff C	0.582	1.7899	1.882
26 32	Rt. 6, Lodi, NJ	26-03-559	86	6	none		DOM	Mr. H. Scholten	BrunSH	poor		25	2	14	1.79		0.97	1.7899	2.035
26 2091	Rt. 46, Saddle Brook, NJ	26-03-559	81	6	unknown		Restaur	Lake Developers		no		30	3	25	1.20	Pine Brook Wel	0.97	1.7899	2.035
26 3528	Samuel Ave., Garfield, NJ	26-03-559	100	6	unknown		DOM	William Bigman		no		20	?	50	0.40	John Lauritsen	0.97	1.7899	2.035
26 825	165 Main St., Lodi, NJ	26-03-562	105	6	none		IND	Lodi Realty Corp.	BrunSH	poor		50	1	14	3.57	Ernest S. Rich	1.358	2.3013	2.672
26 787	Route 17, Lodi, NJ	26-03-563	86	6	none		?	Trucking & Trans. Co. INC	BrunSH	poor		50	1	?	ERR	Ernest S. Rich	1.552	2.3013	2.775
26 1355	Essex St. & Rt. 17, Lodi, NJ	26-03-563	301	8	unknown		A/C	Lodi Shopping Center, INC	BrunSH	poor		350	8	75	4.67	Burrows Well D	1.552	2.3013	2.775
26 2171	Modell's Shoppers World, Rt. 17, Lodi, NJ	26-03-563	300	8	unknown		Diffus	Lodi Shopping Center, INC	BrunSH	poor		290	24	54	5.37	Burrows Well D	1.552	2.3013	2.775
26 3572	113 Essex St., Maywood, NJ	26-03-563	400	10	none		COOL	Jos. S. Muscarelle, INC	BrunSH	poor		159	8	175	0.91	Rinbrand Well	1.552	2.3013	2.775
26 213	Route 17, Lodi, NJ	26-03-566	200	8	unknown		IND	Frank Dini Co.	BrunSH	poor		55	8	15	3.67	Rinbrand Well	1.552	2.0456	2.567
26 130	Lodi, NJ	26-03-566	435	10	unknown		IND	The Interchemical Corp.	BrunSH	poor		187	12	178	1.05	Wm. Stothoff C	1.552	2.0456	2.567
26 4240	?????--Unreadable copy	26-03-566	300	12	none		Test		BrunSH	poor		237	24	30	7.90	Burrows Well D	1.552	2.0456	2.567
26 2901	199 Garibaldi Ave., Lodi, NJ	26-03-567	400	10	none		IND	Charles F. Fields	BrunSH	poor		110	8	178	0.62	Rinbrand Well	1.164	1.7899	2.135
26 650	26 Passaic St., Rochelle Park, NJ	26-03-567	75	6	unknown		DOM	Ben Newhouse	BrunSH	poor		50	3	0	ERR	John W. Sibbon	1.164	1.7899	2.135
26 3034	60 Industrial Rd., Lodi, NJ	26-03-567	400	8	none		COOL	Master Etching Corp.	BrunSH	poor		105	8	167	0.63	Rinbrand Well	1.164	1.7899	2.135
26 1010	Garfield Ave., Lodi, NJ	26-03-57?	459	12	unknown			Borough of Lodi	BrunSH	OK		157		85	1.85	Artesian Well	0	1.0828	1.082
26 2067	113 Farnham Ave., Garfield, NJ	26-03-577	303	6	unknown		IND	YOO-HOO Beverage Co.	BrunSH	poor		95	8	138	0.69	Frank J. Batt	0	1.0828	1.082
26 3155	Boys Club, Main St., Lodi, NJ	26-03-582	450	10	none		Test	Lodi Dept. of Public Works	BrunSH	poor		175	28	249	0.70	Rinbrand Well	0.776	1.5342	1.719
26 4079	Westervelt Pl., Lodi, NJ	26-03-584	70	6	unknown		DOM	Mr. Grasso	BrunSH	poor					ERR	John Lauritsen	0.582	1.2785	1.404
26 3183	Cora Bella Ave., Lodi, NJ	26-03-591	470	10	none		Public	Borough of Lodi	BrunSH	poor		285	40	137	2.08	Rinbrand Well	1.164	1.5342	1.925
26 7369	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	23	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.	1.552	1.5342	2.182
26 7370	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.	1.552	1.5342	2.182
26 7371	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.	1.552	1.5342	2.182

IDN	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER/COMMENT	X	Y	DIST
26 7372	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.	1.552	1.5342	2.182
26 7373	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.	1.552	1.5342	2.182
26 7374	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.	1.552	1.5342	2.182
26 7375	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.	1.552	1.5342	2.182
26 7376	Rt. 46 Westbound & Savoie St., Lodi, NJ	26-03-593	21.5	4	4" X 20'	PVC	OBS	Amoco Oil Co.	BrunSH	good					ERR	Handex Corp.	1.552	1.5342	2.182
26 1216	3 Madison Ave., Hasbrouck Hts., NJ	26-03-597	112	6	unknown		DOM	Ernest S. Richardson	BrunSH	poor		15	1	13	1.15	Ernest S. Rich	1.164	1.0220	1.549
26 8558	57 Union St., Lodi, NJ	26-03-597	60	6	unknown		DOM	Joseph Anseline	BrunSH	poor		25	8	24	1.04	John Lauritsen	1.164	1.0220	1.549
26 5557	454 Blvd, Hasbrouck Hts., NJ	26-03-598	230	6	unknown		Laundry	J. Torre	BrunSH	poor		65	2	76	0.86	Ernest S. Rich	1.358	1.0220	1.708
26 3650	339 Golf Ave., Maywood, NJ	26-03-611	170	5	none		DOM	Henry Hamzer		poor		29	4	97	0.30	Dwight H. Ward	1.746	3.0604	3.530
26 5847	121 E. Hunter Ave., Maywood, NJ	26-03-615	315	8	none			Malt Products Corp.	BrunSH	poor		300	0.5	110	2.73	Sibbons Well D	1.94	2.8127	3.416
26 5039	40 Polifly Rd., Hackensack, NJ	26-03-619	305	6	none		DOM	Players Club	BrunSH	poor		30	6	144	0.21	Rinbrand Well	2.134	2.5570	3.330
26 3952	435 Sumit Ave., Hackensack, NJ	26-03-621	150	6	none		DOM	Howard Mack	BrunSH	poor		35	3	11	3.18	??	2.328	3.0604	3.851
26 936	River St., Hackensack, NJ	26-03-623	189	6	6" X 10'	everdur		Hackensack Water Co.	BrunSH	good		215		81	2.65	Artesian Well	2.716	3.0604	4.097
26 882	Pipe Yard, Hackensack Ave., Hackensack, NJ	26-03-632	194	8	8" X 25'	everdur		Hackensack Water Co.	BrunSH	good		670	24	64	10.47	Artesian Well	3.104	3.0604	4.364
26 914	Pipe Yard, Hackensack Ave., Hackensack, NJ	26-03-632	168	20	20" X 20'	everdur	Public	Hackensack Water Co.	BrunSH	good		1700	24	83	20.48	Artesian Well	3.104	3.0604	4.364
26 1034	Pipe Yard, Hackensack Ave., Hackensack, NJ	26-03-632	190	20	20" X 20'	everdur		Hackensack Water Co.	BrunSH	good		1420	75	100	14.20	Artesian Well	3.104	3.0604	4.364
26 641	Euclid Ave. & Main St., Hackensack, NJ	26-03-635	241	6	10" X 15'	everdur	A/C	Red Lion Inn	BrunSH	poor		400	8	82	4.88	Burrows Well D	3.104	2.8127	4.188
26 6748	160 Passaic St., Hackensack, NJ	26-03-635	12	4	4" X 10'	PVC	OBS	Shell Oil Co.	sand	good					ERR	Handex Corp.	3.104	2.8127	4.188
26 4404	146 Midland Ave., E. Paterson, NJ	26-03-635	95	6	unknown		DOM	John Russell	BrunSH	poor		35	3	40	0.88	Pine Brook Wel	3.104	2.8127	4.188
26 2626	Conklin Pl., Hackensack, NJ	26-03-637	189	6	unknown		A/C	First Baptist Church Assoc.		poor		200	8	0	ERR	Burrows Well D	2.91	2.5570	3.873
26 6139	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" X 10'	PVC	OBS	Shell Oil Co.	sand	good					ERR	Handex Corp.	3.104	2.5570	4.021
26 6140	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" X 10'	PVC	OBS	Shell Oil Co.	sand	good					ERR	Handex Corp.	3.104	2.5570	4.021
26 6141	160 Passaic St., Hackensack, NJ	26-03-638	13	4	4" X 10'	PVC	OBS	Shell Oil Co.	sand	good					ERR	Handex Corp.	3.104	2.5570	4.021
26 5511	700 Pomander Walk, Teaneck, NJ	26-03-638	218	6	unknown		DOM	Teaneck Swim Club	BrunSH	poor		60	2	66	0.91	E. S. Richards	3.104	2.5570	4.021
26 4762	174 Daniel St., Hackensack, NJ	26-03-645	186	6	none		COOL	Kings Custom Molding INC		no		50	2	80	0.63	E. S. Richards	1.94	2.0456	2.819
26 3655	5 Fairway Ave., Maywood, NJ	26-03-646	100	6	none		DOM	Mr. Arthur Abrams	BrunSH	poor		20	4	10	2.00	Rinbrand Well	2.134	2.0456	2.956
26 1030	300 S. Summit Ave., Hackensack, NJ	26-03-648	150	6	unknown			Lang Design Service	BrunSH	poor		10	2	5	2.00	Rinbrand Well	1.94	1.7899	2.639
26 1489	Newman St., Hackensack, NJ	26-03-6??	390	8	none		IND	Geller Seven-Up Bottling Co.	BrunSH	poor		253	8	62	4.08	Artesian Well	1.746	1.0280	2.023
26 1642	Central Ave., Rochelle Park, NJ	26-03-652	100	6	unknown		DOM	Frank Toriello and Sons	BrunSH	poor		20	3	12	1.67	Rinbrand Well	2.522	2.3013	3.414
26 2081	Huyler St., S. Hackensack, NJ	26-03-652	228	6	unknown			Spinnerin Yarn Co. INC	BrunSH	good		17.5	6	71.5	0.24	Artesian Well	2.522	2.3013	3.414
26 1257	First St., Hackensack, NJ	26-03-655	200	8	unknown		DOM	Hackensack Board of Education	BrunSH	poor		?	?	?	ERR	Rinbrand Well	2.522	2.0456	3.247
26 1776	100 Orchard St., Hackensack, NJ	26-03-655	120	10	8" X 15'	everdur	COOL	Hackensack Cable Co.	BrunSH	poor		171	8	72	2.38	Rinbrand Well	2.522	2.0456	3.247
26 2059	Huyler St., S. Hackensack, NJ	26-03-655	140	6	unknown			Spinnerin Yarn Co. INC	BrunSH	good					ERR	Artesian Well	2.522	2.0456	3.247
26 1990	Garaboldi Ave., Lodi, NJ	26-03-656	310	10	unknown		IND	Charles S. Fields	BrunSH	poor		200	?	?	ERR	Rinbrand Well	2.716	2.0456	3.400
26 2650	130 S. Newman St., Hackensack, NJ	26-03-676	220	6	none		COOL	Cast Optics Corp.	BrunSH	poor		60	4	28	2.14	Rinbrand Well	2.134	1.2785	2.487
26 2629	125 Newman St., Hackensack, NJ	26-03-657	200	6	none		COOL	Cast Optics Corp.		no		60	4	28	2.14	Rinbrand Well	2.328	1.7899	2.936
26 5083	92 Meyer St., Hackensack, NJ	26-03-657	225	6	unknown		laundry	Victory on the Sea Laundromat	BrunSH	poor		52	2	82	0.63	E. S. Richards	2.328	1.7899	2.936
26 1883	Middle Town Rd., Hackensack, NJ	26-03-659	400	8	unknown		COOL	Bowler City	BrunSH	poor		108	8	10	10.80	Rinbrand Well	2.716	1.7899	3.252
26 4189	Salem & Moore St., Hackensack, NJ	26-03-665	660	6	none			Peoples Trust Co.	BrunSH	poor		20	8		ERR	Rinbrand Well	3.104	2.0456	3.717
26 28	Fox Theatre, 309 Main St., Hackensack, NJ	26-03-661	252.5	8	8" X 18.5'	Everdur	A/C	Metropolitan Playhouses, INC	BrunSH	good		150		116	1.29	D.M. Lowman &	2.91	2.3013	3.710
26 143	826, Hackensack, NJ	26-03-664	325	6	unknown		carwash	Central Auto Laundry	BrunSH	poor		50	8	58	0.86	J.M. Sibbons	2.91	2.0456	3.557
26 4693	Cedar La. at River, Teaneck, NJ	26-03-666	276	6	none		DOM	Teaneck Pool Rec. Facility	BrunSH	poor		65	8	85	0.76	Rinbrand Well	3.298	2.0456	3.880
26 819	Morris and River Sts., Hackensack, NJ	26-03-667	525	9	unknown			FoodFair Stores INC	BrunSH	poor		55	3	200	0.28	Burrows Well B	2.91	1.7899	3.416
26 248	River St., Hackensack, NJ	26-03-668	304	10	none		COOL	Bergen Evening Record	BrunSH	OK		140	8	157	0.89	Artesian Well	3.104	1.7899	3.583
26 4815	Daniel St., Hackensack, NJ	26-03-673	110	6	unknown		wash	Frank Faustini	BrunSH	poor		25	2	16	1.56	E.S. Richardso	2.134	1.5342	2.628
26 1042	Pleasant Ave., Hackensack, NJ	26-03-674	93	6	unknown		IND	Peter Cantelme	BrunSH	poor		20	1	12	1.67	E.S. Richardso	1.746	1.2785	2.164
26 3851	125 Newman St., Hackensack, NJ	26-03-676	200	6	unknown		COOL	Cast Optics Corp.	BrunSH	poor		100	4	45	2.22	Rinbrand Well	2.134	1.2785	2.487
26 3856	125 Newman St., Hackensack, NJ	26-03-676	288	6	unknown		COOL	Cast Optics Corp.	BrunSH	poor		50	?	80	0.63	Rinbrand Well	2.134	1.2785	2.487
26 3858	125 Newman St., Hackensack, NJ	26-03-676	400	6	unknown		COOL	Cast Optics Corp.	BrunSH	poor		60	4	245	0.24	Rinbrand Well	2.134	1.2785	2.487
26 2081	Green & Wesly Sts., S. Hackensack, NJ	26-03-677	228	6	unknown			Spinnerin Yarn Co.	BrunSH	good		17.5	6	71.5	0.24	Artesian Well	1.746	1.0220	2.023
26 731	Cities Ser. Gas Station, Boulevard, Hacken	26-03-678	88	6	unknown		DOM	Harrison Imp. Co.		no		20	2	2	10.00	Mahey Brothers	1.94	1.0220	2.193
26 2059	Green & Wesly Sts., S. Hackensack, NJ	26-03-677	140	6	unknown			Spinnerin Yarn Co.	BrunSH	good					ERR	Artesian Well	1.746	1.0220	2.023
26 1745	156 Hackensack Ave., Hackensack, NJ	26-03-681	114	6	unknown		COOL	Selly Pressburger		poor		50			ERR	San Fama	2.328	1.5342	2.788

	ID#	ADDRESS	LOROS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLERCOMMENT	X	Y	DIST
	26 2945	32 Romanelli Ave., S. Hackensack, NJ	26-03-682	213	6	6" X 14'	Johnson	COOL	Superior Tape Co.	BrunSH	poor		50	8	150	0.33	Rinbrand Well	2.522	1.5342	2.551
	26 3018	30 Wesley St., S. Hackensack, NJ	26-03-687	300	12	none			Spinnerin Yarn Co.	BrunSH	poor		55	8	155	0.35	Rinbrand Well	2.328	1.0228	2.542
	26 4377	35 Empire Blvd., S. Hackensack, NJ	26-03-687	400	8	none		Diffus	J. Josephson, INC	BrunSH	poor		126	8	192	0.66	Rinbrand Well	2.328	1.0228	2.542
	26 4423	100 Wesley St., S. Hackensack, NJ	26-03-687	300	6	none		COOL	Strannahan Foil Co.	BrunSH	poor		100	8	25	4.00	Rinbrand Well	2.328	1.0228	2.542
	26 1626	??? Hudson? St., Hackensack, NJ	26-03-791	415	8	unknown		IND	?? Bad Copy	BrunSH	poor		76	8	112	0.68	Artesian Well	-0.582	-0.767	0.962
	26 3583	396 Terhune Ave., Passaic, NJ	26-03-7??	180	6	unknown		DOM	Joseph Filippone	BrunSH	poor		25	4	95	0.26	W.H. Beatty	-1.746	-1.278	2.164
	26 4167	Main St., Wallington, NJ	26-03-739	300	10	unknown			Farmland Dairy, INC	BrunSH	poor		240	8	110	2.18	Burrows Well D	-0.194	0.2557	0.320
	26 4170	Main St., Wallington, NJ	26-03-739	400	12	unknown			Farmland Dairy, INC	BrunSH	poor		25	8	158	0.16	Burrows Well D	-0.194	0.2557	0.320
	26 715	Main Ave., Passaic, NJ	26-03-715	500	8	unknown		A/C	N.J. Bank and Trust, Co.	BrunSH	poor		?	?	?	ERR	Rinbrand Well	-1.552	0.5114	1.634
	26 185	Main & Passaic Ave., Passaic, NJ	26-03-716	222	6	unknown		COOL	Bank of Passaic & Trust Co.	BrunSH	poor		55	8	20	2.75	Rinbrand Well	-1.358	0.5114	1.451
	26 4350	Main St., Wallington, NJ	26-03-739	300	12	none		IND	Farmland Dairy, INC	BrunSH	poor		204	2.5	103	1.98	Burrows Well D	-0.194	0.2557	0.320
	26 3807	109 Home St., Passaic, NJ	26-03-718	120	6	unknown		DOM	Mr. Intelisano	BrunSH	poor		20	6	30	0.67	John Lauritsen	-1.552	0.2557	1.572
	26 3214	Oak & Linden St., Passaic, NJ	26-03-719	200	8	none		IND	Eastern Can Co.	BrunSH	poor		65	5	65	1.00	Rinbrand Well	-1.358	0.2557	1.381
	26 3147	26 Jefferson St., Passaic, NJ	26-03-722	400	10	none		COOL	The Pantasote Co.	BrunSH	poor		97	8	165	0.59	Rinbrand Well	-0.97	0.7671	1.236
	26 2147	26 Jefferson St., Passaic, NJ	26-03-722	305	8	none		COOL	The Pantasote Co.	BrunSH	poor		110	8	130	0.85	A.J. Connelly,	-0.97	0.7671	1.236
	26 3148	26 Jefferson St., Passaic, NJ	26-03-722	500	8	none		COOL	The Pantasote Co.	BrunSH	poor		110	8	150	0.73	Rinbrand Well	-0.97	0.7671	1.236
*	26 3087	Lester St., Wallington, NJ	26-03-727	400	12	none		Public	Borough of Wallington	BrunSH	poor		350	72	52	6.73	Rinbrand Well	-1.164	0.2557	1.191
*	26 2953	Maple & Union Blvd., Wallington, NJ	26-03-728	300	8	unknown		Test	Borough of Wallington	BrunSH	poor		90	24	211	0.43	Burrows Well D	-0.97	0.2557	1.003
	26 2602	8th St., Passaic, NJ	26-03-731	500	8	unknown		COOL	J.L. Prescott & Co.	BrunSH	poor		25	8	220	0.11	Rinbrand Well	-0.582	0.7671	0.962
	26 205	176 Saddle River Ave., Garfield, NJ	26-03-731	230	8	unknown		COOL	Ten Brands Frozen Foods	BrunSH	poor		?	?	60	ERR	Rinbrand Well	-0.582	0.7671	0.962
*	26 3933	Dull Field, Wallington, NJ	26-03-735	400	18	unknown		Public	Borough of Wallington	BrunSH	poor		380	72	144	2.64	Burrows Well D	-0.388	0.5114	0.641
*	26 3551	122 Prospect St., Garfield, NJ	26-03-737	95	6	unknown		DOM	Rose Tuminia	BrunSH	poor		20	8	35	0.57	John Lauritsen	-0.582	0.2557	0.635
*	26 5331	Hobart St., Garfield, NJ	26-03-733	400	12	none		Public	Borough of Wallington	BrunSH	OK		302	74	78	3.87	Rinbrand Well	-0.194	0.7671	0.791
	26 4782	Main St., Wallington, NJ	26-03-739	500	8	none			Farmland Dairy	BrunSH	poor		225	8	170	1.32	Rinbrand Well	-0.194	0.2557	0.320
*	26 3608	Main St. & Midland Ave., Wallington, NJ	26-03-739	400	8	none			Borough of Wallington	BrunSH	poor		217	48	188	1.15	Rinbrand Well	-0.194	0.2557	0.320
	26 1494	147 Falstrom Ct., Passaic, NJ	26-03-749	300	8	unknown		IND	Falstrom Co.	BrunSH	poor		145		149	0.97	Rinbrand Well	-1.358	-0.511	1.451
	26 2013	River Rd., Carlton Hill, E. Rutherford, NJ	26-03-7??	378	8	unknown		IND	Royce Chemical Co.	BrunSH	poor		40	8	150	0.27	Rinbrand Well	-1.746	-1.278	2.164
	26 201?	River Rd., Carlton Hill, E. Rutherford, NJ	26-03-75?	455	8	none		IND	Royce Chemical Co.	BrunSH	poor		97	8	170	0.57	Rinbrand Well	-1.164	-0.511	1.271
	26 1342	28 Paulison Ave., Passaic, NJ	26-03-746	54	8	8" X 20'	R.B.	IND	Greery Machine	sand	poor		200		4	50.00	North Jersey A	-1.358	-0.235	1.381
	26 1341	28 Paulison Ave., Passaic, NJ	26-03-746	78	8	8" X 21'	R.B.	IND	Greery Machine	sand	poor		200	4	2	100.00	North Jersey A	-1.358	-0.235	1.381
	26 7723	13 37 Delaware Ave., Passaic, NJ	26-03-747	500	6	unknown		IND	Acme Engraving	BrunSH	poor		60			ERR	Wm. Stothoff C	-1.746	-0.511	1.819
	26 1593	28 Paulison Ave., Passaic, NJ	26-03-751	300	8	unknown		A/C	Greery Machine		no		300	5	24	12.50	North Jersey A	-1.164	0	1.164
	26 7420	Main & Paterson Aves., Wallington, NJ	26-03-752	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	0	0.97
	26 7421	Main & Paterson Aves., Wallington, NJ	26-03-752	16	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	0	0.97
	26 7422	Main & Paterson Aves., Wallington, NJ	26-03-752	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	0	0.97
	26 7423	Main & Paterson Aves., Wallington, NJ	26-03-752	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	0	0.97
	26 7473	Main & Paterson Aves., Wallington, NJ	26-03-752	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	0	0.97
	26 597	148 River St., Passaic, NJ	26-03-754	200	6	unknown		COOL	Ray's Diner	BrunSH	poor		35		60	0.58	Rinbrand Well	-1.164	-0.235	1.191
	26 3705	Carlton Hill, E. Rutherford, NJ	26-03-757	370	8	none		COOL	Royce Chemical Co.	BrunSH	poor		60	8	172	0.35	Rinbrand Well	-1.164	-0.511	1.271
	26 3706	Carlton Hill, E. Rutherford, NJ	26-03-757	370	8	none		COOL	Royce Chemical Co.	BrunSH	poor		60	8	115	0.52	Rinbrand Well	-1.164	-0.511	1.271
	26 4469	17 Carlton Ave., E. Rutherford, NJ	26-03-757	468	8	none		COOL	Royce Chemical Co.	BrunSH	poor		35	8	174	0.20	Rinbrand Well	-1.164	-0.511	1.271
	26-1761	2 Paulison Ave., Passaic, NJ	26-03-7??	300	8	unknown			Tenony Fabrics INC	BrunSH	poor		329	8	90	3.66	Rinbrand Well	-1.746	-1.278	2.164
	26 7584	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	-0.235	1.003
	26 7585	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	-0.235	1.003
	26 7586	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	-0.235	1.003
	26 7587	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	-0.235	1.003
	26 7713	Main Ave. & Paterson Rd., Wallington, NJ	26-03-755	15	4	4" X 10'	PVC	OBS	Amoco Oil Co.	sand	good					ERR	Handex Corp.	-0.97	-0.235	1.003
*	26 2953	Maple & Rose, Wallington, NJ	26-03-756	300	8	unknown		Test	Borough of Wallington	BrunSH	poor		30	3	280	0.11	Burrows Well D	-0.776	-0.235	0.817
	26 4341	164 Madison St., E. Rutherford, NJ	26-03-757	300	8	unknown		IND	Lester Entin Associates	BrunSH	poor		450	8	100	4.50	Somerville Wel	-1.164	-0.511	1.271
	26 4312	164 Madison St., E. Rutherford, NJ	26-03-757	580	6	unknown			Lester Entin Associates		no		150	24	238	0.63	Somerville Wel	-1.164	-0.511	1.271
	26 4382	164 Madison St., E. Rutherford, NJ	26-03-757	470	10	none		COOL	Lester Entin Associates	BrunSH	poor		430	8	112	3.84	Rinbrand Well	-1.164	-0.511	1.271
*	26 4103	Lizette St. & Fleishers Brook, Garfield, NJ	26-03-758	300	10	none			City of Garfield	BrunSH	OK		69	27	158	0.44	Burrows Well D	-0.97	-0.511	1.096
*	26 1934	Main Ave., Wallington, NJ	26-03-761	400	12	none		Public	Borough of Wallington	BrunSH	OK		278	46.5	97	2.87	Burrows Well D	-0.582	0	0.582

167

ID#	ADDRESS	LORDS	DEPTH(FT)	DIAM(")	SCREEN	MAT'L	USE	OWNER	FORMATION	LOG?	USED?	YIELD	HRS PUMPED	DRAW	S'CAP	DRILLER	COMMENT	X	Y	DIST
26 5136	31 Kossuth St., Wallington, NJ	26-03-762	118	6	unknown		DOM	Mr. Kowalowitz	BrunSH	poor		20	4	54	0.37	Pine Brook Wel		-0.388	0	0.388
26 3423	Jefferson Ave., Wallington, NJ	26-03-768	400	8	none		Public	Borough of Wallington	BrunSH	poor		217	24	65	3.34	Rinbrand Well		-0.388	-0.511	0.641
26 4525	41 River St., E. Rutherford, NJ	26-03-775	20	6	7.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.022	1.858
26 4532	41 River St., E. Rutherford, NJ	26-03-778	25	6	3.5" X 10'	Set in		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4524	41 River St., E. Rutherford, NJ	26-03-778	52	6	7.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4530	41 River St., E. Rutherford, NJ	26-03-778	25	6	3.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4528	41 River St., E. Rutherford, NJ	26-03-778	26	6	6" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4526	41 River St., E. Rutherford, NJ	26-03-778	20	6	7.5" X 7.5	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4529	41 River St., E. Rutherford, NJ	26-03-778	25	6	7.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4527	41 River St., E. Rutherford, NJ	26-03-778	20	6	6" X 7.5'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 4531	41 River St., E. Rutherford, NJ	26-03-778	25	6	3.5" X 10'	Drive		Mobil Oil Corp.	sand	poor					ERR	Rinbrand Well		-1.552	-1.278	2.010
26 6606	Erie & Jackson, Rutherford, NJ	26-03-783	24	4	4" X 15'	PVC		Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.776	-0.767	1.091
26 6607	Erie & Jackson, Rutherford, NJ	26-03-783	22	4	4" X 15'	PVC		Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.776	-0.767	1.091
26 6608	Erie & Jackson, Rutherford, NJ	26-03-783	18	4	4" X 12'	PVC		Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.776	-0.767	1.091
26 6609	Erie & Jackson, Rutherford, NJ	26-03-783	18	4	4" X 12'	PVC		Amoco Oil Co.	sand	good					ERR	Handex Corp.		-0.776	-0.767	1.091
26 5289	455 Paterson Ave., Wallington, NJ	26-03-792	200	6	unknown		Car Wash	King Car Wash	BrunSH	poor		55	2	77	0.71	E.S. Richardso		-0.388	-0.767	0.859
26 5	411 Broad St., Carlstadt, NJ	26-03-793	526	8	unknown		IND	Canns Chemical Works	BrunSH	poor		185	8	156	1.19	Parkhurst Well		-0.194	-0.767	0.791
26 1413	Paterson Ave., Carlstadt, NJ	26-03-796	200	8	unknown		A/C	Grand Union Food Stores		no		150	8	40	3.75	Burrows Well D		-0.194	-1.022	1.041
26 3021	Broad & Union Sts., Carlstadt, NJ	26-03-8??	200	6	unknown		IND	Record Electrical Plating Co.	BrunSH	poor		90	8	70	1.29	Rinbrand Well		0	-1.278	1.278
26 4391	192 Paterson Plank Rd., Carlstadt, NJ	26-03-8??	171	6	none		DOM	Peoples Bank of S. Bergen Co.	BrunSH	poor		25	4		ERR	Rinbrand Well		0	-1.278	1.278
26 7635	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	24.8	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		3	0.5	23	0.13	HP Drilling, I		0.194	0.5114	0.546
26-7636	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	27	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		2	0.5	10	0.20	HP Drilling, I		0.194	0.5114	0.546
26-7637	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	25.3	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		1	0.5	5.5	0.18	HP Drilling, I		0.194	0.5114	0.546
26 7638	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	27	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		4	1	11.9	0.34	HP Drilling, I		0.194	0.5114	0.546
26 7639	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	25	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		1.5	0.5	8.5	0.18	HP Drilling, I		0.194	0.5114	0.546
26 7640	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	24.9	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good				7.4	ERR	HP Drilling, I		0.194	0.5114	0.546
26 7641	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	24.8	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		2	1	5.2	0.38	HP Drilling, I		0.194	0.5114	0.546
26 7642	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	24	4	4" X 15'	PVC	OBS	Curtiss Wright Corp.	sand	good		2		7.6	0.26	HP Drilling, I		0.194	0.5114	0.546
26 7643	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	82	4	3.75" X 21	Mul.	OBS	Curtiss Wright Corp.	BrunSH	good		1	1		ERR	HP Drilling, I		0.194	0.5114	0.546
26 7644	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	81	4	3.75" X 20	Mul.	OBS	Curtiss Wright Corp.	BrunSH	good		1	1	43.5	0.02	HP Drilling, I		0.194	0.5114	0.546
26 7645	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	81	4	4.75" X 20	Mul.	OBS	Curtiss Wright Corp.	BrunSH	poor		3	1	52.4	0.06	HP Drilling, I		0.194	0.5114	0.546
26-7646	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	61.5	4	3.75" X 20	Mul.	OBS	Curtiss Wright Corp.	BrunSH	good		10	1	22.6	0.44	HP Drilling, I		0.194	0.5114	0.546
26-7647	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	81	4	none		OBS	Curtiss Wright Corp.	BrunSH	good		3	1	41.1	0.07	HP Drilling, I		0.194	0.5114	0.546
26-7648	1 Passaic St., Hasbrouck Heights, NJ	26-03-815	82	4	3.75" X 20	Mul.	OBS	Curtiss Wright Corp.	BrunSH	good			1	29.4	ERR	HP Drilling, I		0.194	0.5114	0.546
	Wood Ridge, NJ	26-03-816	340	10	unknown		IND	Wright Aeronautical Equip. Co.		no		405		93	4.35	Artesian Well		0.388	0.5114	0.641
	Wood Ridge, NJ	26-03-816	337	10	unknown		IND	Wright Aeronautical Equip. Co.		no		264	8	135	1.96	Artesian Well		0.388	0.5114	0.641
	Wood Ridge, NJ	26-03-816	312	10	unknown		IND	Wright Aeronautical Equip. Co.		no		350		98	3.57	Artesian Well		0.388	0.5114	0.641
26-3914	232 Springfield Ave, Hasbrouck Hgts., NJ	26-03-816	160	6	unknown		DOM	Mr. Amato	BrunSH	poor		50	4	100	0.50	John Lauritsen		0.388	0.5114	0.641
26 4250	Main St., Wallington, NJ	26-03-817	300	12	none		IND	Farmland Dairy	BrunSH	poor		284	8.5	103	2.76	Burrows Well D		0	0.2557	0.255
26 811	520 Main Ave., Wallington, NJ	26-03-817	397	8	unknown		Rechg.	Tube Reducing Corp.	BrunSH	poor		90	4	150	0.60	Burrows Well D		0	0.2557	0.255
26-812	520 Main Ave., Wallington, NJ	26-03-817	265	8	unknown		IND	Tube Reducing Corp.	BrunSH	poor		110	4	150	0.73	Burrows Well D		0	0.2557	0.255
26-812A	520 Main Ave., Wallington, NJ	26-03-817	392	8	unknown		Rechg.	Tube Reducing Corp.	BrunSH	poor		20	4	150	0.13	Burrows Well D		0	0.2557	0.255
26 420	Main St., Wallington, NJ	26-03-817	650	12	none		Dairy	Farmland Dairy	BrunSH	poor		157		279	0.56	Rinbrand Well		0	0.2557	0.255
26-4169	Main St., Wallington, NJ	26-03-817	650	8	none		Dairy	Farmland Dairy	BrunSH	poor		59		240	0.25	Rinbrand Well		0	0.2557	0.255
26-5848	138 Woodside Ave., Hasbrouck Hgts., NJ	26-03-822	162	6	unknown		DOM	Robert Daub		no		32	2	54	0.59	E.S. Richardso		0.776	0.7671	1.091
26 4953	Ottowa Ave., Hasbrouck Hgts, NJ	26-03-822	98	6	unknown		DOM	Gary Van Hook		no		28	2	14	2.00	E.S. Richardso		0.776	0.7671	1.091
26 5023	22 Ottowa Ave., Hasbrouck Hgts., NJ	26-03-823	112	6	none		DOM	Anthony Jenkins		no		35	2	51	0.69	E.S. Richardso		0.97	0.7671	1.236
26 5013	117 Paterson Ave., Hasbrouck Hgts., NJ	26-03-823	118	6	none		DOM	Robert D. Mitchell	BrunSH	poor		30	2	16	1.88	E.S. Richardso		0.97	0.7671	1.236
26 592	Wright Village, Terhune Ave., Lodi, NJ	26-03-824	309	8	unknown		A/C	Food Fair Stores, INC	BrunSH	poor		150	24	160	0.94	Burrows Well D		0.582	0.5114	0.774
26 5307	165 Bell Ave., Hasbrouck Hgts., NJ	26-03-826	150	6	unknown		DOM	Stephen Kriso		no		30	2	24	1.25	E.S. Richardso		0.97	0.5114	1.096
26 6123	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	15	3	3" X 15'	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096
26 6124	Lot 4, Block 27, Hasbrouck Hgts., NJ	26-03-826	14	3	3" X 14'	PVC	OBS	Exxon	sand	good					ERR	Diamond Drilli		0.97	0.5114	1.096
			16	3	3" X 16'															

REFERENCE NO. 19

CHARACTERISTICS OF THE POPULATION

General Population Characteristics

NEW JERSEY

1980 Census of Population

U.S. Department of Commerce
BUREAU OF THE CENSUS

Table 44. **General Characteristics for Counties and County Subdivisions: 1980**

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Counties / County Subdivisions	Race: Total persons: Total	Male	Female	Under 18 years	65 years and over	Median age	In group quarters	White: Persons	White: Households: Total	White: Households: Persons	Black: Persons	Black: Households: Total	Black: Households: Persons	Spanish origin¹: Persons	Spanish origin¹: Households: Total	Spanish origin¹: Households: Persons
Atlantic County	194 119	91 163	102 956	51 062	30 787	33.0	2 807	154 831	58 886	152 721	34 134	11 540	33 592	7 590	[illegible]	[illegible]
Absecon city	6 859	3 294	3 565	1 893	770	32.9	20	6 624	2 219	6 613	166	58	157	77	[illegible]	[illegible]
Atlantic City city	40 199	17 359	22 840	9 737	9 446	38.5	1 431	18 614	9 032	17 596	20 029	7 290	19 703	2 323	[illegible]	[illegible]
Brigantine city	8 318	4 101	4 217	1 641	1 324	34.5	15	8 136	3 377	8 144	76	36	74	101	[illegible]	[illegible]
Buena borough	3 642	1 774	1 868	946	465	31.7	4	3 320	1 172	3 309	58	18	59	483	[illegible]	[illegible]
Buena Vista township	6 959	3 418	3 541	2 387	704	28.7	6	5 289	1 624	5 274	1 386	399	1 389	527	[illegible]	[illegible]
Corbin City city	254	125	129	42	76	50.3	-	244	107	...	10	2	...	1	[illegible]	[illegible]
Egg Harbor township	19 381	9 418	9 963	6 185	1 843	28.9	27	17 154	6 137	17 137	1 961	594	1 968	344	[illegible]	[illegible]
Egg Harbor City city	4 618	2 160	2 458	1 284	625	31.1	30	3 626	1 389	3 603	509	162	493	716	[illegible]	[illegible]
Estell Manor city	848	429	419	277	87	29.6	-	799	257	799	43	11	...	2	[illegible]	[illegible]
Folsom borough	1 892	947	945	702	122	26.8	-	1 814	544	1 817	54	17	55	24	[illegible]	[illegible]
Galloway township	12 176	6 149	6 027	3 367	1 088	27.6	55	11 340	3 674	11 316	698	209	701	181	[illegible]	[illegible]
Hamilton township	9 499	4 491	4 808	2 677	1 070	29.7	202	7 964	2 856	7 850	1 378	419	1 281	211	[illegible]	[illegible]
Hammonton town	12 298	5 915	6 383	3 307	1 530	32.7	118	11 722	3 944	11 597	125	35	120	939	[illegible]	[illegible]
Linwood city	6 144	2 985	3 159	1 788	710	34.3	142	6 078	1 922	5 934	20	5	19	57	[illegible]	[illegible]
Longport borough	1 249	549	700	153	475	58.2	70	1 247	561	...	2	-	...	5	[illegible]	[illegible]
Margate City city	9 179	4 214	4 965	1 688	1 969	46.0	-	9 105	3 824	9 126	12	1	...	55	[illegible]	[illegible]
Mullica township	5 243	2 549	2 694	1 779	538	28.9	47	4 310	1 391	4 247	423	124	428	706	[illegible]	[illegible]
Northfield city	7 795	3 725	4 070	2 072	1 052	35.2	218	7 654	2 485	7 449	90	20	64	68	[illegible]	[illegible]
Pleasantville city	13 435	6 146	7 289	3 950	2 111	31.2	280	6 321	2 564	6 106	6 712	1 993	6 648	538	[illegible]	[illegible]
Port Republic city	837	410	427	228	88	32.9	-	834	297	834	1	1	...	-	[illegible]	[illegible]
Somers Point city	10 330	4 829	5 501	2 381	1 910	33.2	136	9 997	4 164	9 880	243	98	242	88	[illegible]	[illegible]
Ventnor City city	11 704	5 357	6 347	2 188	2 623	40.6	3	11 499	4 966	11 506	35	15	32	115	[illegible]	[illegible]
Weymouth township	1 260	619	641	390	153	29.2	3	1 140	380	1 137	100	33	105	34	[illegible]	[illegible]
Bergen County	845 385	405 372	440 013	199 135	105 276	35.4	7 684	784 834	281 975	779 184	33 043	10 858	31 929	28 514	[illegible]	[illegible]
Allendale borough	5 901	2 852	3 049	1 804	556	33.7	181	5 811	1 680	5 641	15	5	12	61	[illegible]	[illegible]
Alpine borough	1 549	787	762	410	124	34.4	-	1 488	480	1 496	19	2	7	36	[illegible]	[illegible]
Bergenfield borough	25 568	12 306	13 262	6 145	3 167	34.1	-	24 044	8 408	24 066	456	155	451	1 251	[illegible]	[illegible]
Bogota borough	8 344	3 979	4 365	2 159	965	31.4	11	8 094	2 784	8 094	51	18	41	527	[illegible]	[illegible]
Carlstadt borough	6 166	2 978	3 188	1 399	805	33.7	-	6 081	2 283	6 086	10	5	...	153	[illegible]	[illegible]
Cliffside Park borough	21 464	10 216	11 248	3 806	3 406	39.6	38	20 518	8 709	20 508	215	92	202	939	[illegible]	[illegible]
Closter borough	8 164	4 012	4 152	2 145	818	35.5	-	7 654	2 484	7 665	81	26	73	205	[illegible]	[illegible]
Cresskill borough	7 609	3 689	3 920	1 964	1 014	37.6	93	7 251	2 262	7 170	50	17	42	194	[illegible]	[illegible]
Demarest borough	4 963	2 446	2 517	1 390	473	34.2	28	4 640	1 449	4 629	37	5	18	133	[illegible]	[illegible]
Dumont borough	18 334	8 764	9 570	4 393	2 296	34.1	-	17 752	5 944	17 769	87	24	79	704	[illegible]	[illegible]
East Rutherford borough	7 849	3 715	4 134	1 523	1 183	34.5	161	7 529	3 016	7 395	184	62	166	191	[illegible]	[illegible]
Edgewater borough	4 628	2 325	2 303	849	503	32.3	-	4 337	1 901	4 375	64	26	62	218	[illegible]	[illegible]
Elmwood Park borough	18 377	8 709	9 668	3 889	2 670	37.2	-	17 812	6 546	17 802	75	25	76	768	[illegible]	[illegible]
Emerson borough	7 793	3 745	4 048	2 040	860	35.4	280	7 476	2 152	7 228	34	5	19	133	[illegible]	[illegible]
Englewood city	23 701	10 997	12 704	5 770	3 334	35.7	190	12 641	5 016	12 511	9 629	3 201	9 598	2 076	[illegible]	[illegible]
Englewood Cliffs borough	5 698	2 757	2 941	1 423	633	40.5	81	5 066	1 597	5 021	44	10	20	220	[illegible]	[illegible]
Fair Lawn borough	32 229	15 546	16 683	6 790	4 609	40.6	17	31 787	11 454	31 797	65	19	51	560	[illegible]	[illegible]
Fairview borough	10 519	5 059	5 460	2 098	1 643	36.3	9	10 181	4 120	10 164	14	4	...	610	[illegible]	[illegible]
Fort Lee borough	32 449	15 410	17 039	5 368	5 470	40.1	10	28 599	13 538	28 659	551	298	530	1 342	[illegible]	[illegible]
Franklin Lakes borough	8 769	4 470	4 299	2 801	570	34.3	-	8 583	2 468	8 612	13	-	...	74	[illegible]	[illegible]
Garfield city	26 803	12 699	14 104	5 541	4 177	34.2	25	26 214	10 551	26 196	298	107	301	953	[illegible]	[illegible]
Glen Rock borough	11 497	5 533	5 964	3 010	1 342	36.1	14	10 863	3 559	10 869	317	104	315	142	[illegible]	[illegible]
Hackensack city	36 039	17 257	18 782	6 760	4 939	33.5	708	26 730	12 501	26 177	7 497	2 711	7 306	3 741	[illegible]	[illegible]
Harrington Park borough	4 532	2 225	2 307	1 399	350	33.4	-	4 291	1 290	4 298	44	9	42	75	[illegible]	[illegible]
Hasbrouck Heights borough	12 166	5 807	6 359	2 524	1 869	37.7	-	11 987	4 397	12 011	11	3	...	261	[illegible]	[illegible]
Haworth borough	3 509	1 708	1 801	965	389	36.8	-	3 304	1 041	3 322	62	14	...	61	[illegible]	[illegible]
Hillsdale borough	10 495	5 135	5 360	2 927	869	33.9	-	10 236	3 157	10 252	41	13	41	185	[illegible]	[illegible]
Ho-Ho-Kus borough	4 129	1 973	2 156	1 076	477	37.8	-	4 057	1 362	4 068	6	-	...	63	[illegible]	[illegible]
Leonia borough	8 027	3 765	4 262	1 828	1 236	37.8	-	7 483	2 919	7 510	198	78	194	343	[illegible]	[illegible]
Little Ferry borough	9 399	4 621	4 778	2 001	954	32.7	-	8 964	3 550	8 945	117	76	124	411	[illegible]	[illegible]
Lodi borough	23 956	11 346	12 610	5 228	2 769	31.5	144	22 954	8 973	22 836	354	136	337	1 082	[illegible]	[illegible]
Lyndhurst township	20 326	9 606	10 720	4 324	2 828	35.8	11	20 016	7 309	20 022	8	4	...	482	[illegible]	[illegible]
Mahwah township	12 127	6 053	6 074	3 266	938	31.3	678	11 277	3 536	10 779	381	80	261	208	[illegible]	[illegible]
Maywood borough	9 895	4 715	5 180	2 187	1 506	37.3	-	9 669	3 578	9 701	21	4	17	318	[illegible]	[illegible]
Midland Park borough	7 381	3 553	3 828	1 850	924	32.9	-	7 298	2 539	7 314	3	3	...	67	[illegible]	[illegible]
Montvale borough	7 318	3 619	3 699	2 227	499	32.7	18	7 204	2 245	7 185	15	4	17	113	[illegible]	[illegible]
Moonachie borough	2 706	1 333	1 373	552	256	35.1	-	2 665	996	2 662	3	2	...	47	[illegible]	[illegible]
New Milford borough	16 876	7 937	8 939	3 590	2 440	37.0	226	16 264	6 030	16 046	115	42	111	421	[illegible]	[illegible]
North Arlington borough	16 587	7 596	8 991	3 115	2 740	40.3	22	16 315	6 395	16 306	7	2	...	557	[illegible]	[illegible]
Northvale borough	5 046	2 459	2 587	1 471	420	32.4	-	4 888	1 468	4 888	3	1	...	251	[illegible]	[illegible]
Norwood borough	4 413	2 200	2 213	1 291	379	33.9	-	4 239	1 256	4 252	8	2	...	92	[illegible]	[illegible]
Oakland borough	13 443	6 693	6 750	4 005	789	31.3	186	13 164	3 809	12 986	94	26	99	209	[illegible]	[illegible]
Old Tappan borough	4 168	2 043	2 125	1 341	321	33.5	42	4 069	1 154	4 048	16	4	11	56	[illegible]	[illegible]
Oradell borough	8 658	4 221	4 437	2 256	1 010	37.6	22	8 393	2 707	8 374	12	2	...	88	[illegible]	[illegible]
Palisades Park borough	13 732	6 481	7 251	2 819	1 976	34.5	-	12 790	5 227	12 815	35	18	33	618	[illegible]	[illegible]
Paramus borough	26 474	12 774	13 700	6 471	2 807	37.3	1 165	25 343	7 399	24 269	112	13	47	604	[illegible]	[illegible]
Park Ridge borough	8 515	4 168	4 347	2 376	719	32.9	10	8 281	2 697	8 285	47	9	38	134	[illegible]	[illegible]
Ramsey borough	12 899	6 316	6 583	3 886	1 074	33.0	28	12 600	4 054	12 576	68	21	60	137	[illegible]	[illegible]
Ridgefield borough	10 294	4 875	5 419	2 045	1 643	39.7	-	10 095	3 839	10 098	13	5	...	259	[illegible]	[illegible]
Ridgefield Park village	12 738	5 958	6 780	2 795	1 644	33.0	27	12 429	4 770	12 402	99	23	53	574	[illegible]	[illegible]
Ridgewood village	25 208	11 900	13 308	7 204	3 035	35.6	194	24 101	8 015	23 976	502	161	478	434	[illegible]	[illegible]
River Edge borough	11 111	5 254	5 857	2 417	1 725	38.9	-	10 815	4 036	10 832	6	1	...	254	[illegible]	[illegible]
River Vale township	9 489	4 598	4 891	2 753	593	33.8	72	9 170	2 774	9 121	44	11	32	152	[illegible]	[illegible]
Rochelle Park township	5 603	2 616	2 987	1 169	978	39.9	-	5 538	2 040	5 543	-	-	-	111	[illegible]	[illegible]
Rockleigh borough	192	106	86	72	23	31.0	46	186	56	144	3	-	...	3	[illegible]	[illegible]
Rutherford borough	19 068	8 975	10 093	4 118	2 798	34.6	604	17 986	6 587	17 519	471	132	387	548	[illegible]	[illegible]
Saddle Brook township	14 084	6 769	7 315	3 104	1 412	34.6	97	13 858	4 730	13 772	41	18	39	263	[illegible]	[illegible]
Saddle River borough	2 763	1 365	1 398	668	356	40.9	14	2 708	872	2 716	13	-	...	25	[illegible]	[illegible]
South Hackensack township	2 229	1 083	1 146	507	258	33.8	-	2 172	721	2 164	23	11	25	123	[illegible]	[illegible]
Teaneck township	39 007	18 622	20 385	9 388	4 933	35.1	1 570	27 826	9 764	26 395	9 184	2 648	8 970	1 888	[illegible]	[illegible]
Tenafly borough	13 552	6 439	7 113	3 514	1 973	39.4	127	12 777	4 486	12 719	81	10	34	404	[illegible]	[illegible]

¹Persons of Spanish origin may be of any race.

Table 44. **General Characteristics for Counties and County Subdivisions: 1980**—Con.

[For meaning of symbols, see introduction. For definitions of terms, see appendixes A and B]

Counties County Subdivisions	Race — Total persons — Total	Male	Female	Under 18 years	65 years and over	Median age	In group quarters	White — Persons	White — Households — Total	White — Households — Persons	Black — Persons	Black — Households — Total	Black — Households — Persons	Spanish origin[1] — Persons	Spanish origin — Households — Total	Spanish origin — Households — Persons
Bergen County—Con.																
Teterboro borough	19	10	9	1	3	50.5	-	19	10	19	-	-	-	-	-	
Upper Saddle River borough	7 958	3 967	3 991	2 456	437	35.1	-	7 734	2 227	7 745	71	13	59	96	18	
Waldwick borough	10 802	5 314	5 488	2 984	771	31.6	16	10 552	3 222	10 545	41	10	33	204	52	
Wallington borough	10 741	5 125	5 616	2 003	1 354	34.0	8	10 380	4 429	10 384	144	79	149	240	84	
Washington township	9 550	4 683	4 867	2 653	614	33.7	10	9 284	2 744	9 294	33	9	27	162	35	
Westwood borough	10 714	5 007	5 707	2 591	1 559	34.4	109	9 819	3 532	9 737	628	199	626	209	55	
Woodcliff Lake borough	5 644	2 790	2 854	1 746	419	35.0	103	5 494	1 581	5 409	18	3	14	65	10	
Wood-Ridge borough	7 929	3 796	4 133	1 771	1 080	36.1	-	7 815	2 777	7 833	20	6	17	124	31	
Wyckoff township	15 500	7 522	7 978	4 494	1 572	36.3	289	15 174	4 681	14 935	59	12	44	171	39	
Burlington County	362 542	181 636	180 906	107 342	28 682	29.2	14 216	306 987	100 159	296 811	45 471	12 583	42 232	8 658	1 997	
Bass River township	1 344	650	694	398	194	32.1	-	1 342	487	1 341	1	1	...	8	4	
Beverly city	2 919	1 440	1 479	845	325	28.7	-	2 258	784	2 259	565	170	558	104	30	
Bordentown city	4 441	2 042	2 399	1 034	436	32.5	34	3 766	1 504	3 732	617	236	617	65	14	
Bordentown township	7 170	3 605	3 565	1 769	578	31.4	293	6 691	2 340	6 532	330	92	228	112	35	
Burlington city	10 246	4 811	5 435	2 575	1 443	33.7	54	7 853	2 966	7 802	2 301	786	2 309	137	44	
Burlington township	11 527	5 485	6 042	3 318	1 031	29.4	283	9 048	3 038	8 764	2 170	741	2 226	233	68	
Chesterfield township	3 847	2 695	1 172	824	198	25.1	1 538	2 778	712	2 252	913	17	58	184	5	
Cinnaminson township	16 072	7 891	8 181	4 790	1 200	33.6	131	14 931	4 254	14 800	884	285	893	84	19	
Delanco township	3 730	1 830	1 900	1 009	464	32.3	31	3 705	1 277	3 679	13	3	...	19	3	
Delran township	14 811	7 376	7 435	4 752	814	29.7	8	13 658	4 335	13 662	859	349	857	139	42	
Eastampton township	3 814	1 879	1 935	1 057	224	29.3	6	3 400	1 326	3 390	286	116	301	86	31	
Edgewater Park township	9 273	4 489	4 784	2 451	581	28.4	-	7 879	2 915	7 912	1 219	411	1 228	170	51	
Evesham township	21 508	10 520	10 988	7 140	1 125	29.3	101	20 451	6 512	20 598	427	125	418	205	43	
Fieldsboro borough	597	302	295	175	62	31.7	-	424	135	418	165	47	...	8	3	
Florence township	9 084	4 311	4 773	2 372	1 020	32.4	15	8 372	3 056	8 358	638	231	645	58	23	
Hainesport township	3 236	1 603	1 633	862	353	31.9	-	3 161	1 109	3 171	33	9	33	31	10	
Lumberton township	5 236	2 492	2 744	1 281	644	31.4	122	4 800	1 827	4 699	278	128	285	132	45	
Mansfield township	2 523	1 231	1 292	715	272	33.7	-	2 487	819	2 489	8	2	...	29	5	
Maple Shade township	20 525	9 849	10 676	4 238	2 356	32.1	289	19 339	8 043	19 113	791	378	751	240	87	
Medford township	17 622	8 604	9 018	5 990	1 257	31.2	112	17 388	5 449	17 291	67	26	67	85	19	
Medford Lakes borough	4 958	2 477	2 481	1 613	278	32.0	-	4 917	1 472	4 922	-	-	-	17	3	14
Moorestown township	15 596	7 301	8 295	4 095	2 299	38.0	451	14 474	4 883	14 043	919	332	934	81	25	76
Mount Holly township	10 818	5 184	5 634	3 139	1 085	30.0	135	8 739	3 092	8 663	1 730	501	1 716	528	146	509
Mount Laurel township	17 614	8 718	8 896	5 603	1 071	31.2	336	16 472	5 108	16 185	806	234	778	156	43	133
New Hanover township	14 258	10 710	3 548	2 324	41	20.7	10 550	9 021	767	2 542	3 969	272	949	1 376	98	337
North Hanover township	9 050	4 536	4 514	3 469	258	24.8	-	7 263	2 307	7 368	1 252	379	1 328	386	92	328
Palmyra borough	7 085	3 369	3 716	1 659	831	32.8	-	6 203	2 421	6 210	818	262	818	45	15	36
Pemberton borough	1 198	568	630	342	119	27.8	-	1 036	394	1 039	85	37	92	46	13	41
Pemberton township	29 720	14 580	15 140	10 769	1 395	26.0	351	21 715	6 769	21 553	5 984	1 784	6 325	1 644	438	1 602
Riverside township	7 941	3 816	4 125	1 961	1 065	32.4	11	7 665	2 791	7 659	205	67	202	146	45	145
Riverton borough	3 068	1 494	1 574	760	438	33.8	64	2 977	1 059	2 917	80	26	82	5	2	...
Shamong township	4 537	2 304	2 233	1 435	238	29.3	47	4 424	1 322	4 404	91	15	73	29	5	16
Southampton township	8 808	4 146	4 662	1 891	2 377	44.4	5	8 693	3 486	8 712	51	17	48	52	17	47
Springfield township	2 691	1 322	1 369	818	216	31.2	32	2 646	834	2 613	27	14	30	45	12	44
Tabernacle township	6 236	3 165	3 071	2 322	325	28.6	3	6 076	1 767	6 091	113	34	115	47	12	41
Washington township	808	406	402	212	121	35.1	16	771	262	755	2	1	...	75	14	71
Westampton township	3 383	1 637	1 746	900	211	31.1	18	2 544	849	2 488	712	233	775	159	41	141
Willingboro township	39 912	19 558	20 354	14 411	1 318	27.0	33	23 400	6 678	23 319	15 102	3 967	15 473	1 321	287	1 191
Woodland township	2 285	1 730	555	417	167	32.8	1 147	2 099	362	1 118	163	11	14	32	4	11
Wrightstown borough	3 031	1 510	1 521	1 177	48	22.4	-	1 921	657	1 946	797	244	824	337	98	323
Camden County	471 650	225 202	246 448	137 437	49 232	30.4	4 194	383 245	135 412	379 090	67 232	21 667	66 747	20 626	5 198	20 009
Audubon borough	9 533	4 466	5 067	2 203	1 562	34.5	-	9 477	3 578	9 485	2	1	...	79	19	69
Audubon Park borough	1 274	581	693	287	244	41.4	-	1 269	493	1 268	-	-	-	8	3	...
Barrington borough	7 418	3 571	3 847	1 895	690	31.1	-	7 115	2 628	7 124	232	95	230	58	18	53
Bellmawr borough	13 721	6 719	7 002	3 762	1 158	31.5	25	13 599	4 411	13 354	62	24	58	104	30	83
Berlin borough	5 786	2 782	3 004	1 739	504	31.4	-	5 664	1 812	5 664	62	20	62	53	7	25
Berlin township	5 348	2 605	2 743	1 758	427	28.2	4	4 653	1 451	4 627	652	183	674	85	20	86
Brooklawn borough	2 133	1 038	1 095	543	297	34.8	-	2 122	775	2 123	1	-	...	22	6	19
Camden city	84 910	39 218	45 692	31 531	8 602	25.0	860	25 739	10 580	25 165	45 008	14 132	44 797	16 308	4 000	16 144
Cherry Hill township	68 785	33 433	35 352	19 773	5 777	34.3	659	64 530	20 661	63 917	1 649	545	1 640	800	217	758
Chesilhurst borough	1 590	777	813	535	154	28.4	48	443	152	413	1 058	299	1 064	22	6	26
Clementon borough	5 764	2 753	3 011	1 406	625	29.3	-	5 453	2 079	5 464	241	106	249	36	9	25
Collingswood borough	15 838	7 277	8 561	3 629	2 731	33.1	81	15 404	6 301	15 341	198	95	191	174	55	164
Gibbsboro borough	2 510	1 247	1 263	765	178	29.5	23	2 447	740	2 422	48	15	54	28	5	16
Gloucester township	45 156	21 966	23 190	13 827	3 007	28.2	572	42 458	14 141	42 001	1 968	708	1 900	433	121	356
Gloucester City city	13 121	6 396	6 725	3 583	1 800	32.5	107	13 021	4 585	12 940	22	2	9	104	29	91
Haddon township	15 875	7 438	8 437	3 440	2 810	38.9	-	15 680	6 184	15 701	77	27	73	112	39	99
Haddonfield borough	12 337	5 736	6 601	3 121	1 931	37.5	238	12 049	4 397	11 835	201	67	196	69	19	63
Haddon Heights borough	8 361	3 888	4 473	1 925	1 384	36.9	9	8 315	3 073	8 311	5	2	...	27	8	18
Hi-Nella borough	1 250	567	683	361	87	25.3	-	1 111	432	1 110	119	47	118	22	7	20
Laurel Springs borough	2 249	1 082	1 167	604	258	31.1	-	2 238	765	2 239	1	1	...	3	1	...
Lawnside borough	3 042	1 412	1 630	865	367	34.1	-	41	16	31	2 967	1 013	2 987	22	6	13
Lindenwold borough	18 196	8 724	9 472	4 538	1 064	27.2	19	15 570	6 472	15 554	2 265	972	2 275	265	85	219
Magnolia borough	4 881	2 352	2 529	1 358	428	29.6	-	4 240	1 405	4 248	597	230	580	46	13	39
Merchantville borough	3 972	1 763	2 209	911	788	34.6	21	3 923	1 553	3 899	21	8	21	24	9	25
Mount Ephraim borough	4 863	2 323	2 540	1 045	755	39.7	9	4 838	1 852	4 836	10	8	...	24	7	17
Oaklyn borough	4 223	1 989	2 234	856	795	38.5	-	4 193	1 754	4 194	3	2	...	30	5	20
Pennsauken township	33 775	16 159	17 616	8 509	4 519	33.9	187	30 619	10 587	30 436	2 600	796	2 610	499	126	500
Pine Hill borough	8 684	4 166	4 518	2 491	764	27.5	-	8 017	3 056	8 014	560	216	563	92	30	82
Pine Valley borough	23	13	10	4	4	49.5	-	23	11	23	-	-	-	-	-	-
Runnemede borough	9 461	4 648	4 813	2 393	901	31.7	-	9 227	3 193	9 235	144	69	149	94	27	75
Somerdale borough	5 900	2 899	3 001	1 587	513	31.3	-	5 034	1 744	5 040	766	227	776	100	27	87
Stratford borough	8 005	3 850	4 155	2 220	685	30.9	104	7 582	2 452	7 404	331	122	321	87	22	73
Tavistock borough	9	...	...	...	...	...	...	9	4	...	-	-	-	-	-	-
Voorhees township	12 919	6 330	6 589	3 708	772	29.9	82	11 584	4 157	11 527	771	280	768	138	48	119

[1]Persons of Spanish origin may be of any race.

REFERENCE NO. 20

FORM 87

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Permit No. 26-482
Application No. ______
County ______

WELL RECORD

26.13.227

1. OWNER Marathon Enterprises ADDRESS E. Union Ave., Rutherford, N.J.
   Owner's Well No. 1 SURFACE ELEVATION 18 Feet (Above mean sea level)
2. LOCATION same
3. DATE COMPLETED 2/10/80 DRILLER E. S. Richardson
4. DIAMETER: top 6 Inches Bottom 6 Inches TOTAL DEPTH 242 Feet
5. CASING: Type steel Diameter 6 Inches Length 83 Feet
6. SCREEN: Type ______ Size of Opening ______ Diameter ______ Inches Length ______ Feet
   Range in Depth { Top ______ Feet; Bottom ______ Feet } Geologic Formation ______
   Tail piece: Diameter ______ Inches Length ______ Feet
7. WELL FLOWS NATURALLY ----- Gallons per Minute at ______ Feet above surface
   Water rises to ______ Feet above surface
8. RECORD OF TEST: Date 2/8/81 Yield 65 Gallons per minute
   Static water level before pumping 14 Feet below surface
   Pumping level 60 feet below surface after 2 hours pumping
   Drawdown 46 Feet Specific Capacity ______ Gals. per min. per ft. of drawdown
   How Pumped submersible How measured in barrel
   Observed effect on nearby wells ______
9. PERMANENT PUMPING EQUIPMENT: I only drilled well and tested for capacity
   Type ______ Mfrs. Name ______
   Capacity ______ G.P.M. How Driven ______ H.P. ______ R.P.M. ______
   Depth of Pump in well ______ Feet Depth of Footpiece in well ______ Feet
   Depth of Air Line in well ______ Feet Type of Meter on Pump ______ Size ______ Inches
10. USED FOR ______ AMOUNT { Average ______ Gallons Daily; Maximum ______ Gallons Daily }
11. QUALITY OF WATER ______ Sample: Yes ______ No. ______
    Taste ______ Odor ______ Color ______ Temp. ______ °F
12. LOG ______ Are samples available? ______
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)

174

13. SOURCE OF DATA ______
14. DATA OBTAINED BY ______ Date ______

REFERENCE NO. 21

NUS CORPORATION **TELECON NOTE**

CONTROL NO:	DATE: 2/7/90	TIME: 1500

DISTRIBUTION:
U.S. PRINTING INK File
TDD# 02-8910-32

BETWEEN: Bob Siery	OF: Wallington Public Works	PHONE: (201) 777-1726

AND: Peter Babich (NUS)

DISCUSSION:

I asked Mr. Siery about water useage in Wallington. He informed me that only 1 private residence uses groundwater for drinking. The residence is located on Kossuth Street.

Other uses include 3 commercial businesses and 1 farm (approx 7 acres) for irrigation.

Drinking water for Wallington is supplied by Passaic Valley Water Dept. For emergencies Wallington uses Hackensack Water Dept. as backup.

ACTION ITEMS:

REFERENCE NO. 10

MURRAY HILL PARKWAY SITE
343 MURRAY HILL PARKWAY
E. RUTHERFORD / BERGEN CO.

SUBJECT: Site Inspection conducted by NJDEP representatives on August 21, 1986.

PURPOSE: To further investigate soil and water contamination caused by improper storage and disposal of hazardous wastes at the facility.

SITE CONDITIONS: General housekeeping at the site was poor. Drums were stacked throughout the yard in a somewhat disorganized manner. Stream water was murky and an oily sheen was observed when samples were taken.

SAMPLING: A total of eleven samples were collected. They included:

- Seven soil samples
- Two aqueous samples
- One field blank
- One trip blank

FINDINGS: Weather conditions were rainy, therefore no air monitoring instruments could be used. These conditions also caused soil samples to be watery. However, this should not affect any analysis done by the laboratory.

Total hours to complete: 120

Submitted by:

Helen DeCerce
HSMS III
Sept. 18, 1986

EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Murray Hill Parkway Site aka:US Printing Ink	343 Murray Hill Parkway

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
E. Rutherford	NJ	07073	Bergen		

09 COORDINATES LATITUDE 40° 49' 24.3" LONGITUDE 74° 05' 23.5"

10 TYPE OF OWNERSHIP (Check one) XX A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION 08 / 21 / 86 (MONTH DAY YEAR)

02 SITE STATUS XX ACTIVE ☐ INACTIVE

03 YEARS OF OPERATION unknown (BEGINNING YEAR) present (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ________ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ________ (Name of firm)
XX E. STATE ☐ F. STATE CONTRACTOR ________ (Name of firm) ☐ G. OTHER ________ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Carol Graubart	HSMS IV	NJDEP	(609) 633-2215

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Richard Gervasio	Supervising Tech.	NJDEP	(609) 984-3015
Helen Kornitas	HSMS III	NJDEP	(609) 633-2218
David Van Eck	HSMS IV	NJDEP	(609) 984-3224
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Herman Echbeterri		343 Murray Hill Parkway	(201) 933-7100
			( )
			( )
			( )
			( )
			( )
BLOCK 106A LOT 4C			

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	1025	Rainy 70°

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Carol Graubart	NJDEP/Hazardous Site Mitigation Admin	(609) 633-2215

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Helen Kornitas	BSA	NJDEP	609-633-2218	08 / 25 / 86 (MONTH DAY YEAR)

002

EPA FORM 2070-13 (7-81)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D 9[illegible]

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [ ] A. SOLID
- [ ] B. POWDER, FINES
- [x] C. SLUDGE
- [ ] D. OTHER ________ (Specify)
- [ ] E. SLURRY
- [x] F. LIQUID
- [ ] G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

- TONS ________
- CUBIC YARDS unknown
- NO. OF DRUMS ________

03 WASTE CHARACTERISTICS (Check all that apply)

- [x] A. TOXIC
- [ ] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [ ] D. PERSISTENT
- [ ] E. SOLUBLE
- [ ] F. INFECTIOUS
- [ ] G. FLAMMABLE
- [ ] H. IGNITABLE
- [x] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [ ] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	unknown		Materials from ink
OLW	OILY WASTE	unknown		manufacturing.
SOL	SOLVENTS	unknown		
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	unknown		

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SOL	Toluene	108-88-3	Storage tank	78	ug/g
MES	Cadmium, total	7440-43-9	Stream	1.5	ug/g
MES	Chromium, total	7440-47-3	Stream	21	ug/g
MES	Lead, total	7439-92-1	Stream	5	ug/g
MES	Arsenic, total	7440-38-2	Stream	1.3	ug/g
MES	Nickel, total	7440-02-0	Stream	7.5	ug/g
OLW	Oil and Grease	999	Tank and Stream	3.5-53	ug/g
SOL	Light Paraffinic				
	Distillate	64741-50-0	Solvent Carrier		
SOL	Heavy Naphthenic				
	Distillate	64741-53-3	Solvent Carrier		
	Attachments C,D,G,I				

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

NJDEP/DWM files: 25 Prospect St
Trenton 08615

003

EPA FORM 2070-12 (7-81)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: NJ | 02 SITE NUMBER: [illegible]

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [x] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE ______) [x] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED ______ 04 NARRATIVE DESCRIPTION
Spills of waste materials to soils have been documented. Potential exists for leaching of contaminants to ground water.

01 [ ] B. SURFACE WATER CONTAMINATION — 02 [x] OBSERVED (DATE 11/11/80) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED ______ 04 NARRATIVE DESCRIPTION
Black liquid was observed in a stream adjacent to the site, and vegetation in a dry ditch was stained black.

01 [ ] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE ______) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED ______ 04 NARRATIVE DESCRIPTION

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE: ______) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

01 [x] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE: ______) [x] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION
A potential exists for direct contact with contaminated material due to presence of sludge on the ground.

01 [x] F. CONTAMINATION OF SOIL — 02 [x] OBSERVED (DATE: 11/11/80) [ ] POTENTIAL [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED ______ 04 NARRATIVE DESCRIPTION
Spilled material was noted on ground behind the building. During an inspection by NJDEP conducted on 7/13/82, material still had not been cleaned up.

01 [ ] G. DRINKING WATER CONTAMINATION — 02 [ ] OBSERVED (DATE: ______) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

01 [x] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE: ______) [x] POTENTIAL [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED ______ 04 NARRATIVE DESCRIPTION
Potential exists for worker exposure due to waste materials found on the ground uncontained.

01 [x] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE ______) [x] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION
Potential exists for direct contact with contaminated material due to presence of sludge on the ground.

004

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: NJ | 02 SITE NUMBER: [illegible]

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 [X] J. DAMAGE TO FLORA — 02 [X] OBSERVED (DATE: 11/11/80) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Vegetation in an adjacent ditch was found to be stained black during an NJDEP inspection.

01 [ ] K. DAMAGE TO FAUNA — 02 [ ] OBSERVED (DATE: ____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION (include name(s) of species)

01 [ ] L. CONTAMINATION OF FOOD CHAIN — 02 [ ] OBSERVED (DATE: ____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

01 [X] M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 [X] OBSERVED (DATE: 11/11/80) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____
04 NARRATIVE DESCRIPTION
Spilled material was noted on ground and drums were observed in poor condition, many lacking lids.

01 [X] N. DAMAGE TO OFFSITE PROPERTY — 02 [X] OBSERVED (DATE: 11/11/80) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Black liquid was observed in a tributary to Berry's Creek adjacent to the site.

01 [ ] O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 [ ] OBSERVED (DATE: ____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

01 [X] P. ILLEGAL/UNAUTHORIZED DUMPING — 02 [X] OBSERVED (DATE: 11/11/80) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION
On April 23, 1981, NJDEP issued a Notice of Prosecution for unpermitted disposal of solid waste.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: ____

IV. COMMENTS
Wastes are currently shipped off-site .

V. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)
NJDEP/DWM, HSMA files: [illegible] Prospect St
Trenton [illegible]

005

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D980769327

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS	NJD095171948			TSD Facility
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☒ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☒ H. OTHER none (Specify)

05 OTHER

- ☐ A. BUILDINGS ON SITE

06 AREA OF SITE

_______ (Acres)

07 COMMENTS

Hazardous waste is shipped off site.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Drums of hazardous wastes are not stored on site now, but have been in the past.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS

Areas where contamination due to spills has occurred in the past.

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

NJDEP - BSA Files 65 Prospect Street
Trenton, New Jersey 08618

006

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NJ
02 SITE NUMBER: D980769327

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. ☐	B. ☐
NON-COMMUNITY	C. XX	D. ☐

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A. ☐	B. ☐	C. ☐
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE
A. ________ (mi)
B. ________ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)
☐ A. ONLY SOURCE FOR DRINKING
☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)
☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)
☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 0

03 DISTANCE TO NEAREST DRINKING WATER WELL ________ (mi)

04 DEPTH TO GROUNDWATER ________ (ft)

05 DIRECTION OF GROUNDWATER FLOW ________

06 DEPTH TO AQUIFER OF CONCERN ________ (ft)

07 POTENTIAL YIELD OF AQUIFER ________ (gpd)

08 SOLE SOURCE AQUIFER ☐ YES ☐ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

No drinking water wells in the area.

10 RECHARGE AREA
☐ YES
☐ NO
COMMENTS

11 DISCHARGE AREA
☐ YES
☐ NO
COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)
☒ A. RESERVOIR, RECREATION DRINKING WATER SOURCE
☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES
☐ C. COMMERCIAL, INDUSTRIAL
☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Berry's Creek	☐	0 (mi)
Hackensack River	☐	>3 (mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN
ONE (1) MILE OF SITE A. ________ NO. OF PERSONS
TWO (2) MILES OF SITE B. ________ NO. OF PERSONS
THREE (3) MILES OF SITE C. ________ NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION ________ (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE ________

04 DISTANCE TO NEAREST OFF-SITE BUILDING ________ (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

Site is in industrial area.

007

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D980769327

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
____ (ft)	____ (ft)	____

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
12 (in)	2.75 (in)	____ %		____ %

09 FLOOD POTENTIAL

SITE IS IN ____ YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE A. ____ (mi) OTHER B. ____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

____ (mi)

ENDANGERED SPECIES: ____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AG LAND
A. ____ (mi)	B. ____ (mi)	C. ____ (mi)	D. ____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is within (1) mile of the Meadowlands area.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NJDEP - BSA: 65 Prospect St.
Trenton, NJ 08618

008

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D980769327

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER	2	PAS - IT Corporation	
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION	7	PAS - IT Corporation	
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
	Weather was very rainy so no field measurements could be taken

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF ______________________ (Name of organization or individual)

03 MAPS ☐ YES ☐ NO

04 LOCATION OF MAPS ______________________

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NJDEP - BSA: 65 Prospect St.
Trenton, NJ 08618

009

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D970769327

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
United States Printing Ink	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
343 Murray Hill Parkway	
05 CITY	06 STATE	07 ZIP CODE
E. Rutherford	NJ	07030
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE	14 ZIP CODE
08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE	14 ZIP CODE
08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE	14 ZIP CODE
08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

010

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D980769327

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
US Printing Ink	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
343 Murray Hill Parkway	

05 CITY	06 STATE	07 ZIP CODE
E. Rutherford	NJ	07073

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NJDEP - BSA: 65 Prospect St.
Trenton, NJ 08618

011

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D980769327

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
US Printing Ink	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
343 Murray Hill Parkway	

05 CITY	06 STATE	07 ZIP CODE
E. Rutherford	NJ	07073

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NJDEP - BSA: 65 Prospect St.
Trenton, NJ 08618

012

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D980769327

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ F. WASTE REPACKAGED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ H. ON SITE BURIAL — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ L. ENCAPSULATION — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL — 013 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D980769327

II. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ S. CAPPING/COVERING 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ T. BULK TANKAGE REPAIRED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ U. GROUT CURTAIN CONSTRUCTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ V. BOTTOM SEALED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ W. GAS CONTROL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ X. FIRE CONTROL 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ Y. LEACHATE TREATMENT 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ Z. AREA EVACUATED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ 1. ACCESS TO SITE RESTRICTED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ 2. POPULATION RELOCATED 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

01 ☐ 3. OTHER REMEDIAL ACTIVITIES 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NJDEP - BSA: 65 Prospect St.
Trenton, NJ 08618

014

EPA FORM 2070-13 (7-81)

⬥EPA	POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 11 - ENFORCEMENT INFORMATION	I. IDENTIFICATION 01 STATE: NJ 02 SITE NUMBER: D980769327

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION XX YES ☐ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

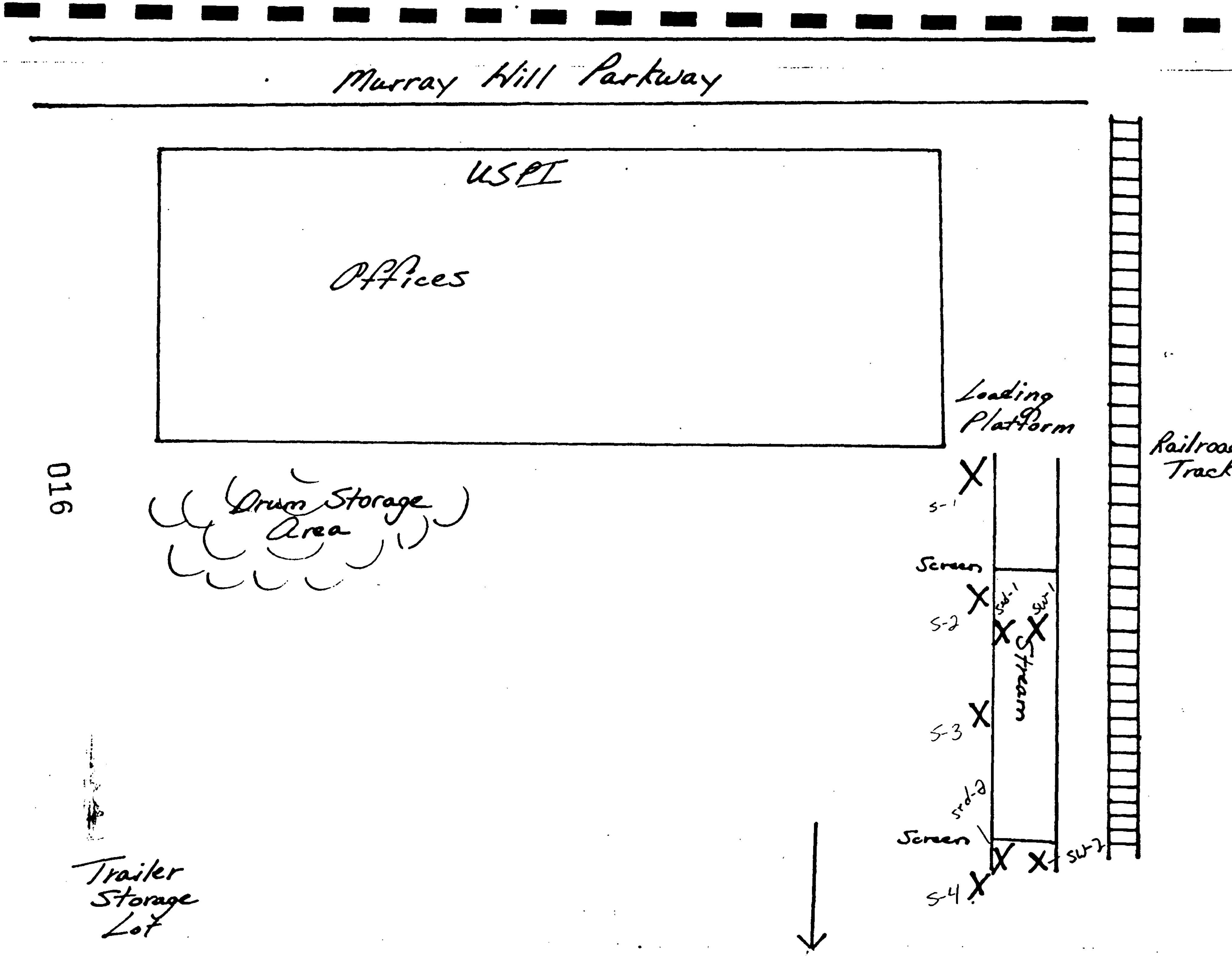
A Notice of Prosecution was issued in 1981 stating that the site must be cleaned up.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NJDEP - BSA: 65 Prospect St.
Trenton, NJ 08618

015

EPA FORM 2070-13 (7-81)


Murray Hill Parkway
USPI
Offices
Loading Platform
Railroad Tracks
Drum Storage Area
S-1
Screen
S-2
sd-1
sw-1
Stream
S-3
sd-2
Screen
S-4
sw-2
Trailer Storage Lot

016

Let's protect our earth

1 SEP 1987

US Printing

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS SITE MITIGATION
401 E. State St., CN 413, Trenton, N.J. 08625
(609) 984-2902

Anthony J. Farro
Director

AUG 31 1987

M E M O R A N D U M

TO: Al Pleva, Section Chief
Bureau of Planning and Assessment
Division of Hazardous Waste Management

THROUGH: Nancy E. Spence, Chief BF for
Barry R. Frasco, Environmental Scientist I BF
Carol H. Pillsbury, Principal Environmental Specialist
Quality Assurance Section

FROM: Kathleen M. Grimes, Research Scientist III
Quality Assurance Section
Bureau of Environmental Measurements & Quality Assurance

SUBJECT: Review of U. S. Printing analytical data, 21 August 1986; IT - Edison and IT - Knoxville.IT Tier I deliverables, sample numbers 59578 thru 59587.

The Quality Assurance Section, Bureau of Environmental Measurements and Quality Assurance, Division of Hazardous Site Mitigation has completed the review of the above mentioned analytical data. Four samples were reviewed IT sample 59584 (Surface water #1), IT sample 59586 (Sediment #1), IT sample 59578 (Field Blank) and IT sample 59579 (Soil #1). The laboratory failed to supply a trip blank for analysis. The samples were analyzed for volatile organics, base neutral organics, acid extractable organics, metals, pesticides and PCBs.

A detailed validation report is attached to this memo, however specific comments for the validated samples are noted below. The metals fraction was not reviewed.

A soil or solid matrix method blank was used by IT-Knoxville for the analysis of the Pesticide/ PCB fraction. The use of soil or solid matrix method blanks are not acceptable to NJDEP. However the use of the soil blank did not interfere with the identification of the Aroclor 1254 in one of the samples.

Several non target compounds were detected in the Field blank, Sediment #1 and Surface Water #1 during the analysis for Pesticide/PCBs. These analytes were not presence in the method blanks. Quantification of these unknowns by the laboratory are not required under the contract.

The volatile organic fraction for the surface water #1 and sediment #1 are qualified due to one surrogate being outside of the control limits. The volatile organic fraction for the field blank is rejected due to two surrogates being outside of the control limits. The acid extractable fraction for sample Surface Water #1 is qualified due to one surrogate being outside of the control limits.

The volatile fraction for the Soil #1, Sediment #1 and the pesticide/PCB fraction for Sediment #1 are qualified due to exceeding the holding times.

The dichlorodifluoromethane data for Field Blank, Surface Water #1 and Soil #1 is rejected due to RRF value being below 0.05.

Sample Surface water #1 (59584)
Review of the BNA fraction revealed two compounds that were not identified by the laboratory; benzoic acid at 12J ug/l and 2-methylnapthalene 34J ug/l. These compounds are only considered tentative since the laboratory did not confirm the presence with the submittal of the mass spectra. The laboratory call has been overridden.

Sample Sediment #1 (59586)
The laboratory utilized a 1 gram sample size for the pesticide/PCB fraction as the initial volume which is the procedure used for medium level soil samples and raised the detection limit. Low level data was not submitted. Very shallow peaks are present in the chromatogram and the actual presence of the peaks cannot not be confirmed or negated since low level analysis was not provided. The run is not rejected or qualified. If additional information is required, resampling is recommended.

Sample Soil #1 (59579)
The Aroclor 1254 is present in this sample. The laboratory quantified using one peak in each of the runs. One peak can be use for quantification by the laboratory. The QA/QC associated with both runs is acceptable. The laboratory analyzed the sample twice, once using a mixed phase column and the second time a single phase column. Recalculation of the reported values for each of the columns revealed that the laboratory utilized the confirmation run for quantification and the value reported was lower than the value calculated by QAS using the same peak. The values reported are vastly different between the primary and confirmation are presented in the table below.

Run	Laboratory	QAS
Run 9/5/86 Mixed phase column using one peak		1526 ug/kg
Run 9/12/86 OV1 column	220	330 ug/kg

QAS is reporting the 1526 ug/kg as the correct value for this sample overriding the laboratory decision.

If you have any question concerning the review, please do not hesitate to contact this office at (3)0752.

HS151

c: John Mateo

Target and non Target Compound Summary List

Site Name: U.S. Printing

Sample	Analyte	(ug/L) Method Blank Conc.	Lab Report Conc.	QAS Report Conc.	QAS Decision	Footnotes
		ug/L	ug/L	ug/L		
Surface Water #1 (59584)						
VOA Fraction						
methylene chloride		2.55	4JB	4JB	negate	9,3
dichlorodifluoromethane		ND	ND	ND	reject	5
BNA fraction						
benzoic acid		ND	ND	12J	tentative	3,15
2-methylnapthalene		ND	ND	34J	tentative	15
BNA unknown scan 80		ND	160	160J		
Field Blank (59578)						
VOA fraction rejected due to surrogate recovery problems						
BNA non TCL compounds						
butane scan 76		ND	12J	12J	negate	16
		ug/kg	ug/kg	ug/kg		
Soil #1 (59579)						
VOA fraction						
methylene chloride		1.5	4J	4J	negate	9
dichlorodifluoromethane		ND	ND	ND	reject	5
Pesticide/ PCB fraction						
Acolor 1254		ND	220	1526		14
BNA fraction						
non TCL compounds						
unknown alkane scan 455		ND	200	200J		
unknown alkane scan 473		ND	120	120J		
unknown alkane scan 479		ND	430	430J		
Sediment #1 (59586)						
VOA fraction						
methlyene chloride		2.66	10JB	10JB		3,11
BNA fraction						
benzo(a)pyrene		ND	650J	650		

Target Compound Summary List

FOOTNOTES:

1. This sample was diluted prior to analysis. The value reported prior to the dilution correction is less than 3x the value in the method blank. It is the policy of NJDEP-DHSM to negate the reported value due to probable foreign laboratory contamination unrelated to the actual sample. The end-user is alerted that a reportable quantity of the analyte was detected.

2. The reported concentration is quantitatively qualified due to calibration deficiencies.

3. The reported concentration is quantitatively qualified due to poor surrogate recovery.

4. The reported concentration is quantitatively qualified because the concentration is below the CRQL.

5. The reported value is rejected because the calibration response factor for the analyte is less than 0.05.

6. The concentration reported by the laboratory is incorrectly calculated.

7. The laboratory failed to report the presence of the analyte in the sample.

8. This non-target compound was detected as a target compound in another analytical fraction. Therefore, the presence of this compound as a non-target analyte is negated.

9. The value reported is less than 3x the value in the method blank. It is the policy of NJDEP-DHSM to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

10. The value reported is less than 3x the value in the field blank. It is the policy of NJDEP-DHSM to negate the reported value as due to probable foreign contamination unrelated to the actual sample. The end-user, however, is alerted that a reportable quantity of the analyte was detected.

11. The value reported is between 3x and 5x the value in the method blank and may be due to possible foreign laboratory/field contamination unrelated to the actual sample. The value reported is not negated.

12. The value reported is greater than 5x the value in the method blank and is considered "real". The "B" qualifier alerts the end-user to the presence of this analyte in the method blank.

13. The Mass Spectral Identification has not been confirmed and the identification of this compound has been rejected. This Compound should now be considered an unknown.

FOOTNOTES:

14. The value reported by QAS is greater than the laboratory value. The result was obtained on a single phase column while the mixed phase column results was a ten-fold increase. The laboratory quantified off of the confirmation column. instead of the primary column. QAS reports the result obtained from the primary column as the real amount.

15. The laboratory didn't provide the mass spectral proof for the analyte although the quantitation report indicates a hit on the analyte. The value reported by QAS is considered to be tentative.

16. The non target compound was detected as a non target compound in another analytical fraction. Butane is considered to be a non target VOA and it was detected in the BNA fraction. Therefore, the presence of this compound as a non-target analyte is negated.

ADM-012

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO File Murray Hill Parkway aka U.S. Printing

FROM Richard Gervasio, Sup. Env. Tech. DATE

SUBJECT Analytical Results

The following is a summary of the organic results received (10-9-86) from IT Corporation. Listed are hits only, inorganics are listed separately.

SOIL #3

Compound	Conc. ug/kg
Acenaphthylene	2905.
Anthracene	620.
Benzo (b) Fluorathene	580
Benzo (k) Fluorathene	580
Benzo (a) Pyrene	480
Benzo (g, h, i) Perylene	510
Fluoranthene	2400
Indeno (1, 2, 3, cd) Pyrene	450
Pyrene	1600

This data is as received before QA.

HS76:PS

Quantitative Results

Sample Identification: NJDEP Soil 1 Sample Date 8/21/86

IT Laboratory #: 59579 Date Received 8/21/86

Fraction: Volatile Organics

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Benzene	ND	5	5u
Bromoform	ND	5	5u
Carbon Tetrachloride	ND	5	5u
Chlorobenzene	ND	5	5u
Chlorodibromomethane	ND	5	5u
Chloroethane	ND	5	5u
2-Chloroethylvinyl Ether	ND	5	5u
Chloroform	ND	5	5u
Dichlorobromomethane	ND	5	5u
Dichlorodifluoromethane	ND	5	5u
1,1-Dichloroethane	ND	5	5u
1,2-Dichloroethane	ND	5	5u
1,1-Dichloroethylene	ND	5	5u
1,2-Dichloropropane	ND	5	5u
1,3-cis-Dichloropropylene	ND	5	5u
1,3-trans-Dichloropropylene	ND	5	5u
Ethylbenzene	ND	5	5u
Methyl Bromide	ND	5	5u
Methyl Chloride	ND	5	5u
Methylene Chloride	4J	5	5u
1,1,2,2-Tetrachloroethane	ND	5	5u
Tetrachloroethylene	ND	5	5u

Quantitative Results

Sample Identification: NJDEP Soil 1 Sample Date 8/21/86

IT Laboratory #: 59579 Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
Acenaphthene	ND	10	330u
Acenaphthylene	ND	10	330u
Anthracene	ND	10	330u
Benzo(a)anthracene	ND	10	330u
Benzo(b)fluoranthene	ND	10	330u
Benzo(k)fluoranthene	ND	10	330u
Benzo(a)pyrene	ND	10	330u
Benzo(g,h,i)perylene	ND	10	330u
Benzidine	ND	10	330u
Bis(2-Chloroethyl)ether	ND	10	330u
Bis(2-Chloroethoxy)methane	ND	10	330u
Bis(2-Ethylhexyl)phthalate	ND	10	330u
Bis(2-Chloroisopropyl)ether	ND	10	330u
4-Bromophenyl Phenyl Ether	ND	10	330u
Butyl Benzyl Phthalate	ND	10	330u
2-Chloronaphthalene	ND	10	330u
4-Chlorophenyl Phenyl Ether	ND	10	330u
Chrysene	ND	10	330u
Dibenzo(a,h)anthracene	ND	10	330u
Di-n-Butylphthalate	ND	10	330u
1,2-Dichlorobenzene	ND	10	330u
1,3-Dichlorobenzene	ND	10	330u
1,4-Dichlorobenzene	ND	10	330u
3,3'-Dichlorobenzidine	ND	10	330u
Diethylphthalate	ND	10	330u
Dimethylphthalate	ND	10	330u
2,4-Dinitrotoluene	ND	10	330u

Quantitative Results - Page 2 Sample ID: NJDEP Soil 1

IT Lab #: 59579

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
2,6-Dinitrotoluene	ND	10	330u
Di-n-Octylphthalate	ND	10	330u
1,2-Diphenylhydrazine	ND	10	330u
Fluoranthene	ND	10	330u
Fluorene	ND	10	330u
Hexachlorobenzene	ND	10	330u
Hexachlorobutadiene	ND	10	330u
Hexachloroethane	ND	10	330u
Hexachlorocyclopentadiene	ND	10	330u
Indeno(1,2,3-cd)pyrene	ND	10	330u
Isophorone	ND	10	330u
Naphthalene	ND	10	330u
Nitrobenzene	ND	10	330u
N-Nitrosodimethylamine	ND	10	330u
N-Nitrosodi-n-Propylamine	ND	10	330u
N-Nitrosodiphenylamine	ND	10	330u
Phenanthrene	ND	10	330u
Pyrene	ND	10	330u
1,2,4-Trichlorobenzene	ND	10	330u

ND - Not detected at less than 330 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil 1 Sample Date 8/21/86

IT Laboratory #: 59579 Date Received 8/21/86

Fraction: Acid Extractable

Parameter	Sample Concentration (ug/kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
4-Chloro-3-Methylphenol	ND	10	825u
2-Chlorophenol	ND	10	825u
2,4-Dichlorophenol	ND	10	825u
2,4-Dimethyphenol	ND	10	825u
2,4-Dinitrophenol	ND[1]	10	8250u
2-Methyl-4,6-Dinitrophenol	ND[1]	10	8250u
2-Nitrophenol	ND	10	825u
4-Nitrophenol	ND	10	825u
Pentachlorophenol	ND	10	825u
Phenol	ND	10	825u
2,4,6-Trichlorophenol	ND	10	825u

ND[1] - Not detected at less than 8250 ug/Kg
ND - Not detected at less than 825 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

NJDEP Soil #1

IT SAMPLE #
59579

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
unidentified alkane	ABN	457	200 ug/kg
unidentified alkane	ABN	473	120 ug/kg
unidentified alkane	ABN	479	430 ug/kg
no unknown peaks found	VOA		

Soil #2

Quantitative Results

Sample Identification: NJDEP Soil 2 Sample Date 8/21/86

IT Laboratory #: 59580 Date Received 8/21/86

Fraction: Volatile Organics

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Benzene	ND	5	5u
Bromoform	ND	5	5u
Carbon Tetrachloride	ND	5	5u
Chlorobenzene	ND	5	5u
Chlorodibromomethane	ND	5	5u
Chloroethane	ND	5	5u
2-Chloroethylvinyl Ether	ND	5	5u
Chloroform	ND	5	5u
Dichlorobromomethane	ND	5	5u
Dichlorodifluoromethane	ND	5	5u
1,1-Dichloroethane	ND	5	5u
1,2-Dichloroethane	ND	5	5u
1,1-Dichloroethylene	ND	5	5u
1,2-Dichloropropane	ND	5	5u
1,3-cis-Dichloropropylene	ND	5	5u
1,3-trans-Dichloropropylene	ND	5	5u
Ethylbenzene	ND	5	5u
Methyl Bromide	ND	5	5u
Methyl Chloride	ND	5	5u
Methylene Chloride	ND	5	5u
1,1,2,2-Tetrachloroethane	ND	5	5u
Tetrachloroethylene	ND	5	5u

Quantitative Results - Page 2

Sample ID: NJDEP Soil 2
IT Lab #: 59580

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 10 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil #2 Sample Date 8/21/86

IT Laboratory #: 59580 Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
Acenaphthene	ND	10	330u
Acenaphthylene	ND	10	330u
Anthracene	ND	10	330u
Benzo(a)anthracene	ND	10	330u
Benzo(b)fluoranthene	ND	10	330u
Benzo(k)fluoranthene	ND	10	330u
Benzo(a)pyrene	ND	10	330u
Benzo(g,h,i)perylene	ND	10	330u
Benzidine	ND	10	330u
Bis(2-Chloroethyl)ether	ND	10	330u
Bis(2-Chloroethoxy)methane	ND	10	330u
Bis(2-Ethylhexyl)phthalate	26	10	330u
Bis(2-Chloroisopropyl)ether	ND	10	330u
4-Bromophenyl Phenyl Ether	ND	10	330u
Butyl Benzyl Phthalate	ND	10	330u
2-Chloronaphthalene	ND	10	330u
4-Chlorophenyl Phenyl Ether	ND	10	330u
Chrysene	ND	10	330u
Dibenzo(a,h)anthracene	ND	10	330u
Di-n-Butylphthalate	ND	10	330u
1,2-Dichlorobenzene	ND	10	330u
1,3-Dichlorobenzene	ND	10	330u
1,4-Dichlorobenzene	ND	10	330u
3,3'-Dichlorobenzidine	ND	10	330u
Diethylphthalate	ND	10	330u
Dimethylphthalate	ND	10	330u
2,4-Dinitrotoluene	ND	10	330u

Quantitative Results - Page 2 Sample ID: NJDEP Soil #2

IT Lab #: 59580

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
2,6-Dinitrotoluene	ND	10	330u
Di-n-Octylphthalate	ND	10	330u
1,2-Diphenylhydrazine	ND	10	330u
Fluoranthene	ND	10	330u
Fluorene	ND	10	330u
Hexachlorobenzene	ND	10	330u
Hexachlorobutadiene	ND	10	330u
Hexachloroethane	ND	10	330u
Hexachlorocyclopentadiene	ND	10	330u
Indeno(1,2,3-cd)pyrene	ND	10	330u
Isophorone	ND	10	330u
Naphthalene	ND	10	330u
Nitrobenzene	ND	10	330u
N-Nitrosodimethylamine	ND	10	330u
N-Nitrosodi-n-Propylamine	ND	10	330u
N-Nitrosodiphenylamine	ND	10	330u
Phenanthrene	ND	10	330u
Pyrene	ND	10	330u
1,2,4-Trichlorobenzene	ND	10	330u

ND - Not detected at less than 330 ug/Kg.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil #2 Sample Date 8/21/86

IT Laboratory #: 59580 Date Received 8/21/86

Fraction: Acid Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
4-Chloro-3-Methylphenol	ND	10	825u
2-Chlorophenol	ND	10	825u
2,4-Dichlorophenol	ND	10	825u
2,4-Dimethyphenol	ND	10	825u
2,4-Dinitrophenol	ND[1]	10	8250u
2-Methyl-4,6-Dinitrophenol	ND[1]	10	8250u
2-Nitrophenol	ND	10	825u
4-Nitrophenol	ND	10	825u
Pentachlorophenol	ND	10	825u
Phenol	ND	10	825u
2,4,6-Trichlorophenol	ND	10	825u

ND[1] - Not detected at less than 8250 ug/Kg
ND - Not detected at less than 825 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Soil #3

Quantitative Results

Sample Identification: NJDEP Soil 3   Sample Date 8/21/86

IT Laboratory #: 59581   Date Received 8/21/86

Fraction: Volatile Organics

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Benzene	ND	5	5u
Bromoform	ND	5	5u
Carbon Tetrachloride	ND	5	5u
Chlorobenzene	ND	5	5u
Chlorodibromomethane	ND	5	5u
Chloroethane	ND	5	5u
2-Chloroethylvinyl Ether	ND	5	5u
Chloroform	ND	5	5u
Dichlorobromomethane	ND	5	5u
Dichlorodifluoromethane	ND	5	5u
1,1-Dichloroethane	ND	5	5u
1,2-Dichloroethane	ND	5	5u
1,1-Dichloroethylene	ND	5	5u
1,2-Dichloropropane	ND	5	5u
1,3-cis-Dichloropropylene	ND	5	5u
1,3-trans-Dichloropropylene	ND	5	5u
Ethylbenzene	ND	5	5u
Methyl Bromide	ND	5	5u
Methyl Chloride	ND	5	5u
Methylene Chloride	15 BJ	5	5u
1,1,2,2-Tetrachloroethane	ND	5	5u
Tetrachloroethylene	ND	5	5u

Quantitative Results - Page 2

Sample ID: NJDEP Soil 3
IT Lab #: 59581

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 10 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil #3 | Sample Date 8/21/86

IT Laboratory #: 59581 | Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
Acenaphthene	ND	10	330u
Acenaphthylene	290J	10	330u
Anthracene	620	10	330u
Benzo(a)anthracene	ND	10	330u
Benzo(b)fluoranthene	580	10	330u
Benzo(k)fluoranthene	580	10	330u
Benzo(a)pyrene	480	10	330u
Benzo(g,h,i)perylene	510	10	330u
Benzidine	ND	10	330u
Bis(2-Chloroethyl)ether	ND	10	330u
Bis(2-Chloroethoxy)methane	ND	10	330u
Bis(2-Ethylhexyl)phthalate	ND	10	330u
Bis(2-Chloroisopropyl)ether	ND	10	330u
4-Bromophenyl Phenyl Ether	ND	10	330u
Butyl Benzyl Phthalate	ND	10	330u
2-Chloronaphthalene	ND	10	330u
4-Chlorophenyl Phenyl Ether	ND	10	330u
Chrysene	ND	10	330u
Dibenzo(a,h)anthracene	ND	10	330u
Di-n-Butylphthalate	ND	10	330u
1,2-Dichlorobenzene	ND	10	330u
1,3-Dichlorobenzene	ND	10	330u
1,4-Dichlorobenzene	ND	10	330u
3,3'-Dichlorobenzidine	ND	10	330u
Diethylphthalate	ND	10	330u
Dimethylphthalate	ND	10	330u
2,4-Dinitrotoluene	ND	10	330u

Quantitative Results - Page 2

Sample ID: NJDEP Soil #3

IT Lab #: 59581

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
2,6-Dinitrotoluene	ND	10	330u
Di-n-Octylphthalate	ND	10	330u
1,2-Diphenylhydrazine	ND	10	330u
Fluoranthene	2400	10	330u
Fluorene	ND	10	330u
Hexachlorobenzene	ND	10	330u
Hexachlorobutadiene	ND	10	330u
Hexachloroethane	ND	10	330u
Hexachlorocyclopentadiene	ND	10	330u
Indeno(1,2,3-cd)pyrene	450	10	330u
Isophorone	ND	10	330u
Naphthalene	ND	10	330u
Nitrobenzene	ND	10	330u
N-Nitrosodimethylamine	ND	10	330u
N-Nitrosodi-n-Propylamine	ND	10	330u
N-Nitrosodiphenylamine	ND	10	330u
Phenanthrene	ND	10	330u
Pyrene	1600	10	330u
1,2,4-Trichlorobenzene	ND	10	330u

ND - Not detected at less than 330 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil #3 Sample Date 8/21/86

IT Laboratory #: 59581 Date Received 8/21/86

Fraction: Acid Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
4-Chloro-3-Methylphenol	ND	10	825u
2-Chlorophenol	ND	10	825u
2,4-Dichlorophenol	ND	10	825u
2,4-Dimethyphenol	ND	10	825u
2,4-Dinitrophenol	ND[1]	10	8250u
2-Methyl-4,6-Dinitrophenol	ND[1]	10	8250u
2-Nitrophenol	ND	10	825u
4-Nitrophenol	ND	10	825u
Pentachlorophenol	ND	10	825u
Phenol	ND	10	825u
2,4,6-Trichlorophenol	ND	10	825u

ND[1] - Not detected at less than 8250 ug/Kg.

ND - Not detected at less than 825 ug/Kg.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

090

NJDEP Soil #3

IT SAMPLE #
59581

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
no unknown Peaks Found	VOA		ug/kg
ferrocene	ABN	662	7800 J

Soil #4

Quantitative Results - Page 2

Sample ID: NJDEP Soil 4
IT Lab #: 59582

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 10 ug/Kg.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil #4 Sample Date 8/21/86

IT Laboratory #: 59582 Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
Acenaphthene	ND	10	330u
Acenaphthylene	ND	10	330u
Anthracene	ND	10	330u
Benzo(a)anthracene	ND	10	330u
Benzo(b)fluoranthene	ND	10	330u
Benzo(k)fluoranthene	ND	10	330u
Benzo(a)pyrene	ND	10	330u
Benzo(g,h,i)perylene	ND	10	330u
Benzidine	ND	10	330u
Bis(2-Chloroethyl)ether	ND	10	330u
Bis(2-Chloroethoxy)methane	ND	10	330u
Bis(2-Ethylhexyl)phthalate	26	10	330u
Bis(2-Chloroisopropyl)ether	ND	10	330u
4-Bromophenyl Phenyl Ether	ND	10	330u
Butyl Benzyl Phthalate	ND	10	330u
2-Chloronaphthalene	ND	10	330u
4-Chlorophenyl Phenyl Ether	ND	10	330u
Chrysene	ND	10	330u
Dibenzo(a,h)anthracene	ND	10	330u
Di-n-Butylphthalate	ND	10	330u
1,2-Dichlorobenzene	ND	10	330u
1,3-Dichlorobenzene	ND	10	330u
1,4-Dichlorobenzene	ND	10	330u
3,3'-Dichlorobenzidine	ND	10	330u
Diethylphthalate	ND	10	330u
Dimethylphthalate	ND	10	330u
2,4-Dinitrotoluene	ND	10	330u

Quantitative Results - Page 2   Sample ID: NJDEP Soil #4

IT Lab #: 59582

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
2,6-Dinitrotoluene	ND	10	330u
Di-n-Octylphthalate	ND	10	330u
1,2-Diphenylhydrazine	ND	10	330u
Fluoranthene	ND	10	330u
Fluorene	ND	10	330u
Hexachlorobenzene	ND	10	330u
Hexachlorobutadiene	ND	10	330u
Hexachloroethane	ND	10	330u
Hexachlorocyclopentadiene	ND	10	330u
Indeno(1,2,3-cd)pyrene	ND	10	330u
Isophorone	ND	10	330u
Naphthalene	ND	10	330u
Nitrobenzene	ND	10	330u
N-Nitrosodimethylamine	ND	10	330u
N-Nitrosodi-n-Propylamine	ND	10	330u
N-Nitrosodiphenylamine	ND	10	330u
Phenanthrene	ND	10	330u
Pyrene	ND	10	330u
1,2,4-Trichlorobenzene	ND	10	330u

ND - Not detected at less than 330 ug/Kg.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil #4 — Sample Date 8/21/86

IT Laboratory #: 59582 — Date Received 8/21/86

Fraction: Acid Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
4-Chloro-3-Methylphenol	ND	10	825u
2-Chlorophenol	ND	10	825u
2,4-Dichlorophenol	ND	10	825u
2,4-Dimethyphenol	ND	10	825u
2,4-Dinitrophenol	ND[1]	10	8250u
2-Methyl-4,6-Dinitrophenol	ND[1]	10	8250u
2-Nitrophenol	ND	10	825u
4-Nitrophenol	ND	10	825u
Pentachlorophenol	ND	10	825u
Phenol	ND	10	825u
2,4,6-Trichlorophenol	ND	10	825u

ND[1] - Not detected at less than 8250 ug/Kg
ND - Not detected at less than 825 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Soil #5

Quantitative Results

Sample Identification: NJDEP Soil 5 Sample Date 8/21/86

IT Laboratory #: 59583 Date Received 8/21/86

Fraction: Volatile Organics

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Benzene	ND	5	5u
Bromoform	ND	5	5u
Carbon Tetrachloride	ND	5	5u
Chlorobenzene	ND	5	5u
Chlorodibromomethane	ND	5	5u
Chloroethane	ND	5	5u
2-Chloroethylvinyl Ether	ND	5	5u
Chloroform	ND	5	5u
Dichlorobromomethane	ND	5	5u
Dichlorodifluoromethane	ND	5	5u
1,1-Dichloroethane	ND	5	5u
1,2-Dichloroethane	ND	5	5u
1,1-Dichloroethylene	ND	5	5u
1,2-Dichloropropane	ND	5	5u
1,3-cis-Dichloropropylene	ND	5	5u
1,3-trans-Dichloropropylene	ND	5	5u
Ethylbenzene	ND	5	5u
Methyl Bromide	ND	5	5u
Methyl Chloride	ND	5	5u
Methylene Chloride	ND	5	5u
1,1,2,2-Tetrachloroethane	ND	5	5u
Tetrachloroethylene	ND	5	5u

Quantitative Results - Page 2

Sample ID: NJDEP Soil 5
IT Lab #: 59583

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 10 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil #5 Sample Date 8/21/86

IT Laboratory #: 59583 Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
Acenaphthene	ND	10	330u
Acenaphthylene	ND	10	330u
Anthracene	ND	10	330u
Benzo(a)anthracene	ND	10	330u
Benzo(b)fluoranthene	ND	10	330u
Benzo(k)fluoranthene	ND	10	330u
Benzo(a)pyrene	ND	10	330u
Benzo(g,h,i)perylene	ND	10	330u
Benzidine	ND	10	330u
Bis(2-Chloroethyl)ether	ND	10	330u
Bis(2-Chloroethoxy)methane	ND	10	330u
Bis(2-Ethylhexyl)phthalate	26	10	330u
Bis(2-Chloroisopropyl)ether	ND	10	330u
4-Bromophenyl Phenyl Ether	ND	10	330u
Butyl Benzyl Phthalate	ND	10	330u
2-Chloronaphthalene	ND	10	330u
4-Chlorophenyl Phenyl Ether	ND	10	330u
Chrysene	ND	10	330u
Dibenzo(a,h)anthracene	ND	10	330u
Di-n-Butylphthalate	ND	10	330u
1,2-Dichlorobenzene	ND	10	330u
1,3-Dichlorobenzene	ND	10	330u
1,4-Dichlorobenzene	ND	10	330u
3,3'-Dichlorobenzidine	ND	10	330u
Diethylphthalate	ND	10	330u
Dimethylphthalate	ND	10	330u
2,4-Dinitrotoluene	ND	10	330u

Quantitative Results - Page 2   Sample ID: NJDEP Soil #5

IT Lab #: 59583

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
2,6-Dinitrotoluene	ND	10	330u
Di-n-Octylphthalate	ND	10	330u
1,2-Diphenylhydrazine	ND	10	330u
Fluoranthene	ND	10	330u
Fluorene	ND	10	330u
Hexachlorobenzene	ND	10	330u
Hexachlorobutadiene	ND	10	330u
Hexachloroethane	ND	10	330u
Hexachlorocyclopentadiene	ND	10	330u
Indeno(1,2,3-cd)pyrene	ND	10	330u
Isophorone	ND	10	330u
Naphthalene	ND	10	330u
Nitrobenzene	ND	10	330u
N-Nitrosodimethylamine	ND	10	330u
N-Nitrosodi-n-Propylamine	ND	10	330u
N-Nitrosodiphenylamine	ND	10	330u
Phenanthrene	ND	10	330u
Pyrene	ND	10	330u
1,2,4-Trichlorobenzene	ND	10	330u

ND - Not detected at less than 330 ug/Kg.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Soil #5 Sample Date 8/21/86

IT Laboratory #: 59583 Date Received 8/21/86

Fraction: Acid Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
4-Chloro-3-Methylphenol	ND	10	825u
2-Chlorophenol	ND	10	825u
2,4-Dichlorophenol	ND	10	825u
2,4-Dimethyphenol	ND	10	825u
2,4-Dinitrophenol	ND[1]	10	8250u
2-Methyl-4,6-Dinitrophenol	ND[1]	10	8250u
2-Nitrophenol	ND	10	825u
4-Nitrophenol	ND	10	825u
Pentachlorophenol	ND	10	825u
Phenol	ND	10	825u
2,4,6-Trichlorophenol	ND	10	825u

ND[1] - Not detected at less than 8250 ug/Kg
ND - Not detected at less than 825 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

NJDEP Soil #5

IT SAMPLE #
59583

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
no unidentified Peaks Found	V/A		ug/kg

Sediment #1

Quantitative Results

Sample Identification: NJDEP Sediment #1 Sample Date 8/21/86

IT Laboratory #: 59586 Date Received 8/21/86

Fraction: Volatile Organics

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Benzene	ND	5	5u
Bromoform	ND	5	5u
Carbon Tetrachloride	ND	5	5u
Chlorobenzene	ND	5	5u
Chlorodibromomethane	ND	5	5u
Chloroethane	ND	5	5u
2-Chloroethylvinyl Ether	ND	5	5u
Chloroform	ND	5	5u
Dichlorobromomethane	ND	5	5u
Dichlorodifluoromethane	ND	5	5u
1,1-Dichloroethane	ND	5	5u
1,2-Dichloroethane	ND	5	5u
1,1-Dichloroethylene	ND	5	5u
1,2-Dichloropropane	ND	5	5u
1,3-cis-Dichloropropylene	ND	5	5u
1,3-trans-Dichloropropylene	ND	5	5u
Ethylbenzene	ND	5	5u
Methyl Bromide	ND	5	5u
Methyl Chloride	ND	5	5u
Methylene Chloride	10J/B	5	5u
1,1,2,2-Tetrachloroethane	ND	5	5u
Tetrachloroethylene	ND	5	5u

Quantitative Results - Page 2 Sample ID: NJDEP Sediment #1

IT Lab #: 59586

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 29 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Sediment #1   Sample Date 8/21/86

IT Laboratory #: 59586 (AB994S)   Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
Acenaphthene	ND	10	330u
Acenaphthylene	ND	10	330u
Anthracene	ND	10	330u
Benzo(a)anthracene	ND	10	330u
Benzo(b)fluoranthene	ND	10	330u
Benzo(k)fluoranthene	ND	10	330u
Benzo(a)pyrene	650J	10	330u
Benzo(g,h,i)perylene	ND	10	330u
Benzidine	ND	10	330u
Bis(2-Chloroethyl)ether	ND	10	330u
Bis(2-Chloroethoxy)methane	ND	10	330u
Bis(2-Ethylhexyl)phthalate	ND	10	330u
Bis(2-Chloroisopropyl)ether	ND	10	330u
4-Bromophenyl Phenyl Ether	ND	10	330u
Butyl Benzyl Phthalate	ND	10	330u
2-Chloronaphthalene	ND	10	330u
4-Chlorophenyl Phenyl Ether	ND	10	330u
Chrysene	ND	10	330u
Dibenzo(a,h)anthracene	ND	10	330u
Di-n-Butylphthalate	ND	10	330u
1,2-Dichlorobenzene	ND	10	330u
1,3-Dichlorobenzene	ND	10	330u
1,4-Dichlorobenzene	ND	10	330u
3,3'-Dichlorobenzidine	ND	10	330u
Diethylphthalate	ND	10	330u
Dimethylphthalate	ND	10	330u
2,4-Dinitrotoluene	ND	10	330u

Quantitative Results - Page 2 Sample ID: NJDEP Sediment #1

IT Lab #: 59586

Parameter	Sample Concentration (ug/kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
2,6-Dinitrotoluene	ND	10	330u
Di-n-Octylphthalate	ND	10	330u
1,2-Diphenylhydrazine	ND	10	330u
Fluoranthene	ND	10	330u
Fluorene	ND	10	330u
Hexachlorobenzene	ND	10	330u
Hexachlorobutadiene	ND	10	330u
Hexachloroethane	ND	10	330u
Hexachlorocyclopentadiene	ND	10	330u
Indeno(1,2,3-cd)pyrene	ND	10	330u
Isophorone	ND	10	330u
Naphthalene	ND	10	330u
Nitrobenzene	ND	10	330u
N-Nitrosodimethylamine	ND	10	330u
N-Nitrosodi-n-Propylamine	ND	10	330u
N-Nitrosodiphenylamine	ND	10	330u
Phenanthrene	ND	10	330u
Pyrene	ND	10	330u
1,2,4-Trichlorobenzene	ND	10	330u

ND - Not detected at less than 970 ug/K.
Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Sediment #2

Quantitative Results

Sample Identification: NJDEP Sediment 2 Sample Date 8/21/86

IT Laboratory #: 59587 Date Received 8/21/86

Fraction: Volatile Organics

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Benzene	ND	5	5u
Bromoform	ND	5	5u
Carbon Tetrachloride	ND	5	5u
Chlorobenzene	ND	5	5u
Chlorodibromomethane	ND	5	5u
Chloroethane	ND	5	5u
2-Chloroethylvinyl Ether	ND	5	5u
Chloroform	ND	5	5u
Dichlorobromomethane	ND	5	5u
Dichlorodifluoromethane	ND	5	5u
1,1-Dichloroethane	ND	5	5u
1,2-Dichloroethane	ND	5	5u
1,1-Dichloroethylene	ND	5	5u
1,2-Dichloropropane	ND	5	5u
1,3-cis-Dichloropropylene	ND	5	5u
1,3-trans-Dichloropropylene	ND	5	5u
Ethylbenzene	ND	5	5u
Methyl Bromide	ND	5	5u
Methyl Chloride	ND	5	5u
Methylene Chloride	ND	5	5u
1,1,2,2-Tetrachloroethane	ND	5	5u
Tetrachloroethylene	ND	5	5u

Quantitative Results - Page 2

Sample ID: NJDEP Sediment 2
IT Lab #: 59587

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 10 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Sediment #2   Sample Date 8/21/86

IT Laboratory #: 59587   Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
Acenaphthene	ND	10	330u
Acenaphthylene	ND	10	330u
Anthracene	ND	10	330u
Benzo(a)anthracene	ND	10	330u
Benzo(b)fluoranthene	ND	10	330u
Benzo(k)fluoranthene	ND	10	330u
Benzo(a)pyrene	ND	10	330u
Benzo(g,h,i)perylene	ND	10	330u
Benzidine	ND	10	330u
Bis(2-Chloroethyl)ether	ND	10	330u
Bis(2-Chloroethoxy)methane	ND	10	330u
Bis(2-Ethylhexyl)phthalate	ND	10	330u
Bis(2-Chloroisopropyl)ether	ND	10	330u
4-Bromophenyl Phenyl Ether	ND	10	330u
Butyl Benzyl Phthalate	ND	10	330u
2-Chloronaphthalene	ND	10	330u
4-Chlorophenyl Phenyl Ether	ND	10	330u
Chrysene	ND	10	330u
Dibenzo(a,h)anthracene	ND	10	330u
Di-n-Butylphthalate	ND	10	330u
1,2-Dichlorobenzene	ND	10	330u
1,3-Dichlorobenzene	ND	10	330u
1,4-Dichlorobenzene	ND	10	330u
3,3'-Dichlorobenzidine	ND	10	330u
Diethylphthalate	ND	10	330u
Dimethylphthalate	ND	10	330u
2,4-Dinitrotoluene	ND	10	330u

Quantitative Results - Page 2   Sample ID: NJDEP Sediment #2

IT Lab #: 59587

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
2,6-Dinitrotoluene	ND	10	330u
Di-n-Octylphthalate	ND	10	330u
1,2-Diphenylhydrazine	ND	10	330u
Fluoranthene	ND	10	330u
Fluorene	ND	10	330u
Hexachlorobenzene	ND	10	330u
Hexachlorobutadiene	ND	10	330u
Hexachloroethane	ND	10	330u
Hexachlorocyclopentadiene	ND	10	330u
Indeno(1,2,3-cd)pyrene	ND	10	330u
Isophorone	ND	10	330u
Naphthalene	ND	10	330u
Nitrobenzene	ND	10	330u
N-Nitrosodimethylamine	ND	10	330u
N-Nitrosodi-n-Propylamine	ND	10	330u
N-Nitrosodiphenylamine	ND	10	330u
Phenanthrene	ND	10	330u
Pyrene	ND	10	330u
1,2,4-Trichlorobenzene	ND	10	330u

ND - Not detected at less than 330 ug/Kg.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Sediment #2 Sample Date 8/21/86

IT Laboratory #: 59587 Date Received 8/21/86

Fraction: Acid Extractable

Parameter	Sample Concentration (ug/Kg)	MDL (ug/L)	Blank Concentration (ug/Kg)
4-Chloro-3-Methylphenol	ND	10	825u
2-Chlorophenol	ND	10	825u
2,4-Dichlorophenol	ND	10	825u
2,4-Dimethyphenol	ND	10	825u
2,4-Dinitrophenol	ND[1]	10	8250u
2-Methyl-4,6-Dinitrophenol	ND[1]	10	8250u
2-Nitrophenol	ND	10	825u
4-Nitrophenol	ND	10	825u
Pentachlorophenol	ND	10	825u
Phenol	ND	10	825u
2,4,6-Trichlorophenol	ND	10	825u

ND[1] - Not detected at less than 8250 ug/Kg
ND - Not detected at less than 825 ug/Kg

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

NJDEP Sediment#2

IT SAMPLE #
59587

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
no unknown Peaks Found	VOA		ug/kg
Sulfur Mol (S8)(8Cl19Cl)	ABN	600	17000 J
2, Methyl-8-propyl-dodecane	ABN	400	550 J

Surface Water #1

Sample ID: NJDEP Surface Water #1
IT Lab #: 57584

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 10 ug/L.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Surface Water 1 Sample Date 8/21/86

IT Laboratory #: 59584 Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Acenaphthene	ND	10	10u
Acenaphthylene	ND	10	10u
Anthracene	ND	10	10u
Benzo(a)anthracene	ND	10	10u
Benzo(b)fluoranthene	ND	10	10u
Benzo(k)fluoranthene	ND	10	10u
Benzo(a)pyrene	ND	10	10u
Benzo(g,h,i)perylene	ND	10	10u
Benzidine	ND	10	10u
Bis(2-Chloroethyl)ether	ND	10	10u
Bis(2-Chloroethoxy)methane	ND	10	10u
Bis(2-Ethylhexyl)phthalate	ND	10	10u
Bis(2-Chloroisopropyl)ether	ND	10	10u
4-Bromophenyl Phenyl Ether	ND	10	10u
Butyl Benzyl Phthalate	ND	10	10u
2-Chloronaphthalene	ND	10	10u
4-Chlorophenyl Phenyl Ether	ND	10	10u
Chrysene	ND	10	10u
Dibenzo(a,h)anthracene	ND	10	10u
Di-n-Butylphthalate	ND	10	10u
1,2-Dichlorobenzene	ND	10	10u
1,3-Dichlorobenzene	ND	10	10u
1,4-Dichlorobenzene	ND	10	10u
3,3'-Dichlorobenzidine	ND	10	10u
Diethylphthalate	ND	10	10u
Dimethylphthalate	ND	10	10u
2,4-Dinitrotoluene	ND	10	10u

Quantitative Results - Page 2   Sample ID: NJDEP Surface Water 1

IT Lab #: 59584

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
2,6-Dinitrotoluene	ND	10	10u
Di-n-Octylphthalate	ND	10	10u
1,2-Diphenylhydrazine	ND	10	10u
Fluoranthene	ND	10	10u
Fluorene	ND	10	10u
Hexachlorobenzene	ND	10	10u
Hexachlorobutadiene	ND	10	10u
Hexachloroethane	ND	10	10u
Hexachlorocyclopentadiene	ND	10	10u
Indeno(1,2,3-cd)pyrene	ND	10	10u
Isophorone	ND	10	10u
Naphthalene	ND	10	10u
Nitrobenzene	ND	10	10u
N-Nitrosodimethylamine	ND	10	10u
N-Nitrosodi-n-Propylamine	ND	10	10u
N-Nitrosodiphenylamine	ND	10	10u
Phenanthrene	ND	10	10u
Pyrene	ND	10	10u
1,2,4-Trichlorobenzene	ND	10	10u

ND - Not detected at less than 10 ug/L.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

NJDEP

PAS SAMPLE #
59584

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
no unidentified Peaks found	VOA		
Unknown	ABN	8.0	160J

Surface Water #2

<u>Quantitative Results</u>

Sample Identification: NJDEP Surface Water #2 Sample Date 8/21/86

IT Laboratory #: 59585 Date Received 8/21/86

Fraction: Volatile Organics

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Benzene	ND	5	5u
Bromoform	ND	5	5u
Carbon Tetrachloride	ND	5	5u
Chlorobenzene	ND	5	5u
Chlorodibromomethane	ND	5	5u
Chloroethane	ND	5	5u
2-Chloroethylvinyl Ether	ND	5	5u
Chloroform	ND	5	5u
Dichlorobromomethane	ND	5	5u
Dichlorodifluoromethane	ND	5	5u
1,1-Dichloroethane	ND	5	5u
1,2-Dichloroethane	ND	5	5u
1,1-Dichloroethylene	ND	5	5u
1,2-Dichloropropane	ND	5	5u
1,3-cis-Dichloropropylene	ND	5	5u
1,3-trans-Dichloropropylene	ND	5	5u
Ethylbenzene	ND	5	5u
Methyl Bromide	ND	5	5u
Methyl Chloride	ND	5	5u
Methylene Chloride	ND	5	5u
1,1,2,2-Tetrachloroethane	ND	5	5u
Tetrachloroethylene	ND	5	5u

Sample ID: NJDEP Surface Water #2
IT Lab #: 59585

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 10 ug/L

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Suface Water 2 Sample Date 8/21/86

IT Laboratory #: 59585 Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Acenaphthene	ND	10	10u
Acenaphthylene	ND	10	10u
Anthracene	ND	10	10u
Benzo(a)anthracene	ND	10	10u
Benzo(b)fluoranthene	ND	10	10u
Benzo(k)fluoranthene	ND	10	10u
Benzo(a)pyrene	ND	10	10u
Benzo(g,h,i)perylene	ND	10	10u
Benzidine	ND	10	10u
Bis(2-Chloroethyl)ether	ND	10	10u
Bis(2-Chloroethoxy)methane	ND	10	10u
Bis(2-Ethylhexyl)phthalate	ND	10	10u
Bis(2-Chloroisopropyl)ether	ND	10	10u
4-Bromophenyl Phenyl Ether	ND	10	10u
Butyl Benzyl Phthalate	ND	10	10u
2-Chloronaphthalene	ND	10	10u
4-Chlorophenyl Phenyl Ether	ND	10	10u
Chrysene	ND	10	10u
Dibenzo(a,h)anthracene	ND	10	10u
Di-n-Butylphthalate	ND	10	10u
1,2-Dichlorobenzene	ND	10	10u
1,3-Dichlorobenzene	ND	10	10u
1,4-Dichlorobenzene	ND	10	10u
3,3'-Dichlorobenzidine	ND	10	10u
Diethylphthalate	ND	10	10u
Dimethylphthalate	ND	10	10u
2,4-Dinitrotoluene	ND	10	10u

Quantitative Results - Page 2   Sample ID: NJDEP Surface Water 2

IT Lab #: 59585

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
2,6-Dinitrotoluene	ND	10	10u
Di-n-Octylphthalate	ND	10	10u
1,2-Diphenylhydrazine	ND	10	10u
Fluoranthene	ND	10	10u
Fluorene	ND	10	10u
Hexachlorobenzene	ND	10	10u
Hexachlorobutadiene	ND	10	10u
Hexachloroethane	ND	10	10u
Hexachlorocyclopentadiene	ND	10	10u
Indeno(1,2,3-cd)pyrene	ND	10	10u
Isophorone	ND	10	10u
Naphthalene	ND	10	10u
Nitrobenzene	ND	10	10u
N-Nitrosodimethylamine	ND	10	10u
N-Nitrosodi-n-Propylamine	ND	10	10u
N-Nitrosodiphenylamine	ND	10	10u
Phenanthrene	ND	10	10u
Pyrene	ND	10	10u
1,2,4-Trichlorobenzene	ND	10	10u

ND - Not detected at less than 10 ug/L.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Surface Water 2 Sample Date 8/21/86

IT Laboratory #: 59585 Date Received 8/21/86

Fraction: Acid Extractable

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
4-Chloro-3-Methylphenol	ND	10	10u
2-Chlorophenol	ND	10	10u
2,4-Dichlorophenol	ND	10	10u
2,4-Dimethyphenol	ND	10	10u
2,4-Dinitrophenol	ND[1]	10	10u
2-Methyl-4,6-Dinitrophenol	ND[1]	10	10u
2-Nitrophenol	ND	10	10u
4-Nitrophenol	ND	10	10u
Pentachlorophenol	ND	10	10u
Phenol	ND	10	10u
2,4,6-Trichlorophenol	ND	10	10u

ND[1] - Not detected at less than 250 ug/L.
ND - Not detected at less than 25 ug/L.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

NJDEP

PAS SAMPLE #
59585

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Quant ug/l
no unidentified Peaks Found.	VOA		
Butane	ABN	78	350J

Field Blank

Quantitative Results

Sample Identification: NJDEP Field Blank Sample Date 8/21/86

IT Laboratory #: 59578 Date Received 8/21/86

Fraction: Volatile Organics

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Benzene	ND	5	5u
Bromoform	ND	5	5u
Carbon Tetrachloride	ND	5	5u
Chlorobenzene	ND	5	5u
Chlorodibromomethane	ND	5	5u
Chloroethane	ND	5	5u
2-Chloroethylvinyl Ether	ND	5	5u
Chloroform	ND	5	5u
Dichlorobromomethane	ND	5	5u
Dichlorodifluoromethane	ND	5	5u
1,1-Dichloroethane	ND	5	5u
1,2-Dichloroethane	ND	5	5u
1,1-Dichloroethylene	ND	5	5u
1,2-Dichloropropane	ND	5	5u
1,3-cis-Dichloropropylene	ND	5	5u
1,3-trans-Dichloropropylene	ND	5	5u
Ethylbenzene	ND	5	5u
Methyl Bromide	ND	5	5u
Methyl Chloride	ND	5	5u
Methylene Chloride	ND	5	5u
1,1,2,2-Tetrachloroethane	ND	5	5u
Tetrachloroethylene	ND	5	5u

Quantitative Results - Page 2

Sample ID: NJDEP Field Blank
IT Lab #: 59578

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Toluene	ND	5	5u
Trans 1,2-Dichloroethylene	ND	5	5u
1,1,1-Trichloroethane	ND	5	5u
1,1,2-Trichloroethane	ND	5	5u
Trichloroethylene	ND	5	5u
Trichlorofluoromethane	ND	5	5u
Vinyl Chloride	ND	5	5u

ND - Not detected at less than 10 ug/L

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Field Blank　　Sample Date 8/21/86

IT Laboratory #: 59578　　Date Received 8/21/86

Fraction: Base/Neutral Extractable

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
Acenaphthene	ND	10	10u
Acenaphthylene	ND	10	10u
Anthracene	ND	10	10u
Benzo(a)anthracene	ND	10	10u
Benzo(b)fluoranthene	ND	10	10u
Benzo(k)fluoranthene	ND	10	10u
Benzo(a)pyrene	ND	10	10u
Benzo(g,h,i)perylene	ND	10	10u
Benzidine	ND	10	10u
Bis(2-Chloroethyl)ether	ND	10	10u
Bis(2-Chloroethoxy)methane	ND	10	10u
Bis(2-Ethylhexyl)phthalate	ND	10	10u
Bis(2-Chloroisopropyl)ether	ND	10	10u
4-Bromophenyl Phenyl Ether	ND	10	10u
Butyl Benzyl Phthalate	ND	10	10u
2-Chloronaphthalene	ND	10	10u
4-Chlorophenyl Phenyl Ether	ND	10	10u
Chrysene	ND	10	10u
Dibenzo(a,h)anthracene	ND	10	10u
Di-n-Butylphthalate	ND	10	10u
1,2-Dichlorobenzene	ND	10	10u
1,3-Dichlorobenzene	ND	10	10u
1,4-Dichlorobenzene	ND	10	10u
3,3'-Dichlorobenzidine	ND	10	10u
Diethylphthalate	ND	10	10u
Dimethylphthalate	ND	10	10u
2,4-Dinitrotoluene	ND	10	10u

Quantitative Results - Page 2   Sample ID: NJDEP Field Blank

IT Lab #: 59578

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
2,6-Dinitrotoluene	ND	10	10u
Di-n-Octylphthalate	ND	10	10u
1,2-Diphenylhydrazine	ND	10	10u
Fluoranthene	ND	10	10u
Fluorene	ND	10	10u
Hexachlorobenzene	ND	10	10u
Hexachlorobutadiene	ND	10	10u
Hexachloroethane	ND	10	10u
Hexachlorocyclopentadiene	ND	10	10u
Indeno(1,2,3-cd)pyrene	ND	10	10u
Isophorone	ND	10	10u
Naphthalene	ND	10	10u
Nitrobenzene	ND	10	10u
N-Nitrosodimethylamine	ND	10	10u
N-Nitrosodi-n-Propylamine	ND	10	10u
N-Nitrosodiphenylamine	ND	10	10u
Phenanthrene	ND	10	10u
Pyrene	ND	10	10u
1,2,4-Trichlorobenzene	ND	10	10u

ND - Not detected at less than 10 ug/L.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

Quantitative Results

Sample Identification: NJDEP Field Blank Sample Date 8/21/86

IT Laboratory #: 59578 Date Received 8/21/86

Fraction: Acid Extractable

Parameter	Sample Concentration (ug/L)	MDL (ug/L)	Blank Concentration (ug/L)
4-Chloro-3-Methylphenol	ND	10	10u
2-Chlorophenol	ND	10	10u
2,4-Dichlorophenol	ND	10	10u
2,4-Dimethyphenol	ND	10	10u
2,4-Dinitrophenol	ND[1]	10	10u
2-Methyl-4,6-Dinitrophenol	ND[1]	10	10u
2-Nitrophenol	ND	10	10u
4-Nitrophenol	ND	10	10u
Pentachlorophenol	ND	10	10u
Phenol	ND	10	10u
2,4,6-Trichlorophenol	ND	10	10u

ND[1] - Not detected at less than 250 ug/L.
ND - Not detected at less than 25 ug/L.

Qualifiers: J - Estimated value. Reported value meets the identification criteria, but is less than the specified detection limit.

U - Not detected at method detection limit (MDL).

B - Analyte was found in the blank.

NJDEP

PAS SAMPLE #
59578

Tentatively Identified Compounds

Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
no unidentified Peaks found	VOA		
Butane	ABN	76	12J

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL DATA REPORT PACKAGE

for

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

TRENTON, NJ 08625

Case Name	Field Sample #	Laboratory Sample #	Sample Location	Date and Time of Sample Collection	
United States Printing Ink	C59578	AA1419	U.S. Printing Field Blank	8/21/86	1100
	A59579	AA1401	U.S. Printing Soil #1	8/21/86	1123
	B59580	AA1402	U.S. Printing Soil #2	8/21/86	1130
	C59581	AA1403	U.S. Printing Soil #3	8/21/86	1135
	C59582	AA1404,MS,MSD	U.S. Printing Soil #4	8/21/86	1140
	B59583	AA1405	U.S. Printing Soil #5	8/21/86	1240
	C59584	AA1420,22,23	U.S. Printing Surface Water #1	8/21/86	1150
	B59585	AA1421	U.S. Printing Surface Water #2	8/21/86	1210
	B59586	AA1406,08,09	U.S. Printing Sediment #1	8/21/86	1203
	C59587	AA1407	U.S. Printing Sediment #2	8/21/86	1230

Lab Name IT Analytical Services

Laboratory Director Signature Jack K Hall

Regional Office
5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
C59578

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS-Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1419 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ✓ Soil ______ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	[93] *	13.	Magnesium	[22.]
2.	Antimony	3 u	14.	Manganese	[4.4] N
3.	Arsenic	1. u	15.	Mercury	0.2 u
4.	Barium	20 u	16.	Nickel	10. u
5.	Beryllium	[3 8]	17.	Potassium	[430]
6.	Cadmium	[1 0]	18.	Selenium	1. u N
7.	Calcium	[1.1]	19.	Silver	0.2 u
8.	Chromium	[1.5]	20.	Sodium	[2.1]
9.	Cobalt	5. u	21.	Thallium	1. u
10.	Copper	[15.]	22.	Vanadium	20. u
11.	Iron	[46.] N	23.	Zinc	22.
12.	Lead	[4.9] * N		Precent Solids (%)	

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. D59579

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS Knoxville

CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1510

QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	11500	13.	Magnesium	10500
2.	Antimony	0.5 U N	14.	Manganese	426.
3.	Arsenic	[1.9] S	15.	Mercury	0.16
4.	Barium	[40.]	16.	Nickel	31.
5.	Beryllium	0.5 U	17.	Potassium	[233.]
6.	Cadmium	[0.95]	18.	Selenium	0.2 U
7.	Calcium	13500	19.	Silver	[0.24]
8.	Chromium	44.	20.	Sodium	[546.]
9.	Cobalt	17.	21.	Thallium	0.2 U
10.	Copper	82.	22.	Vanadium	40. N
11.	Iron	25100	23.	Zinc	79 N
12.	Lead	281. * N		Precent Solids (%)	87.92

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
D59580

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville CASE NO. ____

SOW NO. ____

LAB SAMPLE ID. NO. AA 1411 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ____ Medium ____

Matrix: Water ____ Soil ✓ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	5200	13.	Magnesium	1350
2.	Antimony	60. N	14.	Manganese	465.
3.	Arsenic	4.9 S	15.	Mercury	1.3
4.	Barium	144.	16.	Nickel	26.
5.	Beryllium	0.5U	17.	Potassium	[399]
6.	Cadmium	4.5	18.	Selenium	0.3U
7.	Calcium	2520	19.	Silver	[0.61]
8.	Chromium	61.	20.	Sodium	[650.]
9.	Cobalt	[11.]	21.	Thallium	0.3U
10.	Copper	133.	22.	Vanadium	24. N
11.	Iron	58800	23.	Zinc	568. N
12.	Lead	426. * N		Precent Solids (%)	75.37

Cyanide ____

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ____

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. A59581

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville

CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1412

QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	9940	13.	Magnesium	2620
2.	Antimony	0.5u N	14.	Manganese	366.
3.	Arsenic	6.2 s	15.	Mercury	0.30
4.	Barium	[42.]	16.	Nickel	21.
5.	Beryllium	0.5u	17.	Potassium	[715.]
6.	Cadmium	0.3u	18.	Selenium	0.3u
7.	Calcium	2580	19.	Silver	0.05u
8.	Chromium	38.	20.	Sodium	1480.
9.	Cobalt	[9.5]	21.	Thallium	0.3u
10.	Copper	30.	22.	Vanadium	44. N
11.	Iron	19600	23.	Zinc	78. N
12.	Lead	58. * N		Precent Solids (%)	72.64

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
A59582

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1413 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	5270	13.	Magnesium	1780
2.	Antimony	[0.64] s N	14.	Manganese	303.
3.	Arsenic	56 s	15.	Mercury	0.21
4.	Barium	[36]	16.	Nickel	10.
5.	Beryllium	0.4u	17.	Potassium	[447]
6.	Cadmium	[0.64]	18.	Selenium	0.2u
7.	Calcium	1960	19.	Silver	[0.10]
8.	Chromium	20.	20.	Sodium	[1100]
9.	Cobalt	[7.2]	21.	Thallium	0.2u
10.	Copper	23.	22.	Vanadium	25. N
11.	Iron	11600	23.	Zinc	85. N
12.	Lead	102. * N		Precent Solids (%)	86.43

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
A59583

Date 6-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville

CASE NO.

SOW NO.

LAB SAMPLE ID. NO. AA1414

QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	8070	13.	Magnesium	2440
2.	Antimony	0.4U N	14.	Manganese	284.
3.	Arsenic	3.2 S	15.	Mercury	0.94
4.	Barium	101	16.	Nickel	20.
5.	Beryllium	0.4U	17.	Potassium	[582.]
6.	Cadmium	[0.40]	18.	Selenium	0.2U
7.	Calcium	20200	19.	Silver	[0.09]
8.	Chromium	26.	20.	Sodium	[270]
9.	Cobalt	[7.9]	21.	Thallium	0.2U
10.	Copper	24.	22.	Vanadium	18. N
11.	Iron	16400	23.	Zinc	101. N
12.	Lead	45. * N		Precent Solids (%)	85.93
	Cyanide				

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. D59584

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1430 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: ✓ Low ______ Medium ______

Matrix: Water ______ Soil ______ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	1090 *	13.	Magnesium	178000
2.	Antimony	3.U	14.	Manganese	1300 N
3.	Arsenic	3.U	15.	Mercury	0.2U
4.	Barium	20.U	16.	Nickel	[12.]
5.	Beryllium	[3.2]	17.	Potassium	69300
6.	Cadmium	11.	18.	Selenium	20.U N
7.	Calcium	144000	19.	Silver	0.6U
8.	Chromium	~~20~~ 27. (KW)	20.	Sodium	1600000
9.	Cobalt	5.U	21.	Thallium	(KW) ~~20.~~ 20.U
10.	Copper	37.	22.	Vanadium	[38.]
11.	Iron	3640 N	23.	Zinc	97.
12.	Lead	36.5 * N		Precent Solids (%)	

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SEE COMMENTS PAGE FOR DISCUSSION OF NONCONFORMANCE SITUATIONS

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
D59585

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS-Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1431 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ✓ Soil ______ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	224 *	13.	Magnesium	192000
2.	Antimony	3.U	14.	Manganese	1450 N
3.	Arsenic	1.U	15.	Mercury	0.2U
4.	Barium	40.U	16.	Nickel	10.U
5.	Beryllium	[2.7]	17.	Potassium	75400
6.	Cadmium	[2.3]	18.	Selenium	20U N
7.	Calcium	140000	19.	Silver	0.3U
8.	Chromium	22.	20.	Sodium	1680000
9.	Cobalt	5.U	21.	Thallium	(KW) ~~20.~~ 20. U
10.	Copper	28.	22.	Vanadium	[21.]
11.	Iron	1490 N	23.	Zinc	55.
12.	Lead	11.5 * N		Precent Solids (%)	

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
A 59586

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS- Knoxville CASE NO. ____

SOW NO. ____

LAB SAMPLE ID. NO. AA1415 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ____ Medium ____

Matrix: Water ____ Soil ✓ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	9870	13.	Magnesium	[2510]
2.	Antimony	[7.1]s N	14.	Manganese	319.
3.	Arsenic	[5.7] s	15.	Mercury	~~1.7~~ 1.9
4.	Barium	[59.]	16.	Nickel	[17.]
5.	Beryllium	1. U	17.	Potassium	[916.]
6.	Cadmium	[2.1]	18.	Selenium	0.7U
7.	Calcium	[3250]	19.	Silver	[0.45]
8.	Chromium	51.	20.	Sodium	4100
9.	Cobalt	[10.]	21.	Thallium	0.7U
10.	Copper	63.	22.	Vanadium	37. N
11.	Iron	20000	23.	Zinc	241. N
12.	Lead	156. * N		Precent Solids (%)	28.56

Cyanide ____

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SEE COMMENTS PAGE FOR DISCUSSION OF NON CONFORMANCE SITUATIONS

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
A 59587

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS- Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1416 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6840	13.	Magnesium	1740
2.	Antimony	0.5u N	14.	Manganese	281.
3.	Arsenic	71 s	15.	Mercury	0.36
4.	Barium	[25.]	16.	Nickel	13.
5.	Beryllium	0.5u	17.	Potassium	[508.]
6.	Cadmium	0.3u	18.	Selenium	0.3u
7.	Calcium	1620	19.	Silver	[0.06]
8.	Chromium	17.	20.	Sodium	1450
9.	Cobalt	[9.1]	21.	Thallium	0.3u
10.	Copper	22.	22.	Vanadium	32. N
11.	Iron	13500	23.	Zinc	38. N
12.	Lead	30. * N		Precent Solids (%)	73.

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

US [illegible]

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. D59580

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1411 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	5200	13.	Magnesium	1350
2.	Antimony	60. N	14.	Manganese	465.
3.	Arsenic	49 S	15.	Mercury	1.3
4.	Barium	144.	16.	Nickel	26.
5.	Beryllium	0.5U	17.	Potassium	[399]
6.	Cadmium	4.5	18.	Selenium	0.3U
7.	Calcium	2520	19.	Silver	[0.61]
8.	Chromium	61.	20.	Sodium	[650.]
9.	Cobalt	[11.]	21.	Thallium	0.3U
10.	Copper	133.	22.	Vanadium	24. N
11.	Iron	58800	23.	Zinc	568. N
12.	Lead	426. * N		Precent Solids (%)	75.37
	Cyanide				

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. A59583

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville

CASE NO.

SOW NO.

LAB SAMPLE ID. NO. AA 1414

QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	8070	13.	Magnesium	2440
2.	Antimony	0.4U N	14.	Manganese	284.
3.	Arsenic	3.2 S	15.	Mercury	0.94
4.	Barium	101.	16.	Nickel	20.
5.	Beryllium	0.4U	17.	Potassium	[582.]
6.	Cadmium	[0.40]	18.	Selenium	0.2U
7.	Calcium	20200	19.	Silver	[0.09]
8.	Chromium	26.	20.	Sodium	[270]
9.	Cobalt	[7.9]	21.	Thallium	0.2U
10.	Copper	24.	22.	Vanadium	18. N
11.	Iron	16400	23.	Zinc	101. N
12.	Lead	45. * N		Precent Solids (%)	85.93
	Cyanide				

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
D59579

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS Knoxville CASE NO. ____

SOW NO. ____

LAB SAMPLE ID. NO. AA1410 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ____ Medium ____

Matrix: Water ____ Soil ✓ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	11500	13.	Magnesium	10500
2.	Antimony	6.5 U N	14.	Manganese	426.
3.	Arsenic	[1.9] S	15.	Mercury	0.16
4.	Barium	[40.]	16.	Nickel	31.
5.	Beryllium	0.5 U	17.	Potassium	[233.]
6.	Cadmium	[0.98]	18.	Selenium	0.2 U
7.	Calcium	13500	19.	Silver	[0.24]
8.	Chromium	44.	20.	Sodium	[546.]
9.	Cobalt	17.	21.	Thallium	0.2 U
10.	Copper	82.	22.	Vanadium	40. N
11.	Iron	25100	23.	Zinc	79 N
12.	Lead	281. * N		Precent Solids (%)	87.92

Cyanide ____

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ____

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
A59581

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1412 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	9940	13.	Magnesium	2620
2.	Antimony	0.5 u N	14.	Manganese	366.
3.	Arsenic	62 s	15.	Mercury	0.30
4.	Barium	[42.]	16.	Nickel	21.
5.	Beryllium	0.5 u	17.	Potassium	[715.]
6.	Cadmium	0.3 u	18.	Selenium	0.3 u
7.	Calcium	2580	19.	Silver	0.05 u
8.	Chromium	38.	20.	Sodium	1480.
9.	Cobalt	[9.5]	21.	Thallium	0.3 u
10.	Copper	30.	22.	Vanadium	44. N
11.	Iron	19600	23.	Zinc	78. N
12.	Lead	58. * N		Precent Solids (%)	72.64

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
A59582

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS-Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1413 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	5270	13.	Magnesium	1780
2.	Antimony	[0.64] s N	14.	Manganese	303.
3.	Arsenic	5.6 s	15.	Mercury	0.21
4.	Barium	[36]	16.	Nickel	10.
5.	Beryllium	0.4u	17.	Potassium	[447]
6.	Cadmium	[0.64]	18.	Selenium	0.2u
7.	Calcium	1960	19.	Silver	[0.10]
8.	Chromium	20.	20.	Sodium	[1100]
9.	Cobalt	[7.2]	21.	Thallium	0.2u
10.	Copper	23.	22.	Vanadium	25. N
11.	Iron	11600	23.	Zinc	85. N
12.	Lead	102. * N		Precent Solids (%)	86.43

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
A59586

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS- Knoxville CASE NO.

SOW NO.

LAB SAMPLE ID. NO. AA1415 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ____ Medium ____

Matrix: Water ____ Soil ✓ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	9370	13.	Magnesium	[2510]
2.	Antimony	[7.1]s N	14.	Manganese	319.
3.	Arsenic	[5.7] s	15.	Mercury	~~17~~ 1.9
4.	Barium	[59]	16.	Nickel	[17.]
5.	Beryllium	1. U	17.	Potassium	[916.]
6.	Cadmium	[2.1]	18.	Selenium	0.7 U
7.	Calcium	[3250]	19.	Silver	[0.45]
8.	Chromium	51.	20.	Sodium	4100
9.	Cobalt	[10.]	21.	Thallium	0.7 U
10.	Copper	63.	22.	Vanadium	37. N
11.	Iron	20000	23.	Zinc	241. N
12.	Lead	156. * N		Precent Solids (%)	28.56

Cyanide ____

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SEE COMMENTS PAGE FOR DISCUSSION OF NON CONFORMANCE SITUATIONS

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. A 59587

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS- Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA416 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ______ Medium ______

Matrix: Water ______ Soil ✓ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	6840	13.	Magnesium	1740
2.	Antimony	0.5u N	14.	Manganese	281.
3.	Arsenic	7.1 S	15.	Mercury	0.36
4.	Barium	[25.]	16.	Nickel	13.
5.	Beryllium	0.5u	17.	Potassium	[508.]
6.	Cadmium	0.3u	18.	Selenium	0.3u
7.	Calcium	1620	19.	Silver	[0.06]
8.	Chromium	17.	20.	Sodium	1450
9.	Cobalt	[9.1]	21.	Thallium	0.3u
10.	Copper	22.	22.	Vanadium	32. N
11.	Iron	13500	23.	Zinc	38. N
12.	Lead	30. * N		Precent Solids (%)	73.

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ______

Lab Manager Katherine Whatley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
C59578

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS- Knoxville CASE NO. ____

SOW NO. ____

LAB SAMPLE ID. NO. AA1419 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: Low ____ Medium ____

Matrix: Water ✓ Soil ____ Sludge ____ Other ____

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	[98] *	13.	Magnesium	[22]
2.	Antimony	3 U	14.	Manganese	[4.4] N
3.	Arsenic	1. U	15.	Mercury	0.2 U
4.	Barium	20 U	16.	Nickel	10. U
5.	Beryllium	[3 8]	17.	Potassium	[430]
6.	Cadmium	[10]	18.	Selenium	1. U N
7.	Calcium	[11]	19.	Silver	0.2 U
8.	Chromium	[15]	20.	Sodium	[2.1]
9.	Cobalt	5. U	21.	Thallium	1. U
10.	Copper	[15.]	22.	Vanadium	20. U
11.	Iron	[46.] N	23.	Zinc	22.
12.	Lead	[4.9] * N		Precent Solids (%)	

Cyanide ____

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ____

Lab Manager Katherine Whaley

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
D59584

Date 9-24-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME ITAS - Knoxville CASE NO. ______

SOW NO. ______

LAB SAMPLE ID. NO. AA1430 QC REPORT NO. ITAN 22929

Elements Identified and Measured

Concentration: ✓ Low ______ Medium ______

Matrix: Water ✓ Soil ______ Sludge ______ Other ______

ug/L or mg/kg dry weight (Circle One)

1.	Aluminum	1090 *	13.	Magnesium	178000
2.	Antimony	3.U	14.	Manganese	1300 N
3.	Arsenic	3.U	15.	Mercury	0.2U
4.	Barium	20.U	16.	Nickel	[12.]
5.	Beryllium	[3.2]	17.	Potassium	69300
6.	Cadmium	11.	18.	Selenium	20.U N
7.	Calcium	144000	19.	Silver	0.6U
8.	Chromium	~~20~~ 27. (KW)	20.	Sodium	1600000
9.	Cobalt	5.U	21.	Thallium	(KW) ≠ 20. ~~20~~.U
10.	Copper	37.	22.	Vanadium	[38.]
11.	Iron	3640 N	23.	Zinc	97.
12.	Lead	36.5 * N		Precent Solids (%)	

Cyanide ______

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SEE COMMENTS PAGE FOR DISCUSSION OF NONCONFORMANCE SITUATIONS

Lab Manager Katherine Whaley

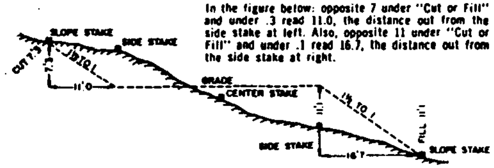
REFERENCE NO. 11

0031F
J078

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1.	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

HNU5Ø31

HNU5Ø31

Murray Hill PARKWAY Site

J078

TABLE OF CONTENTS

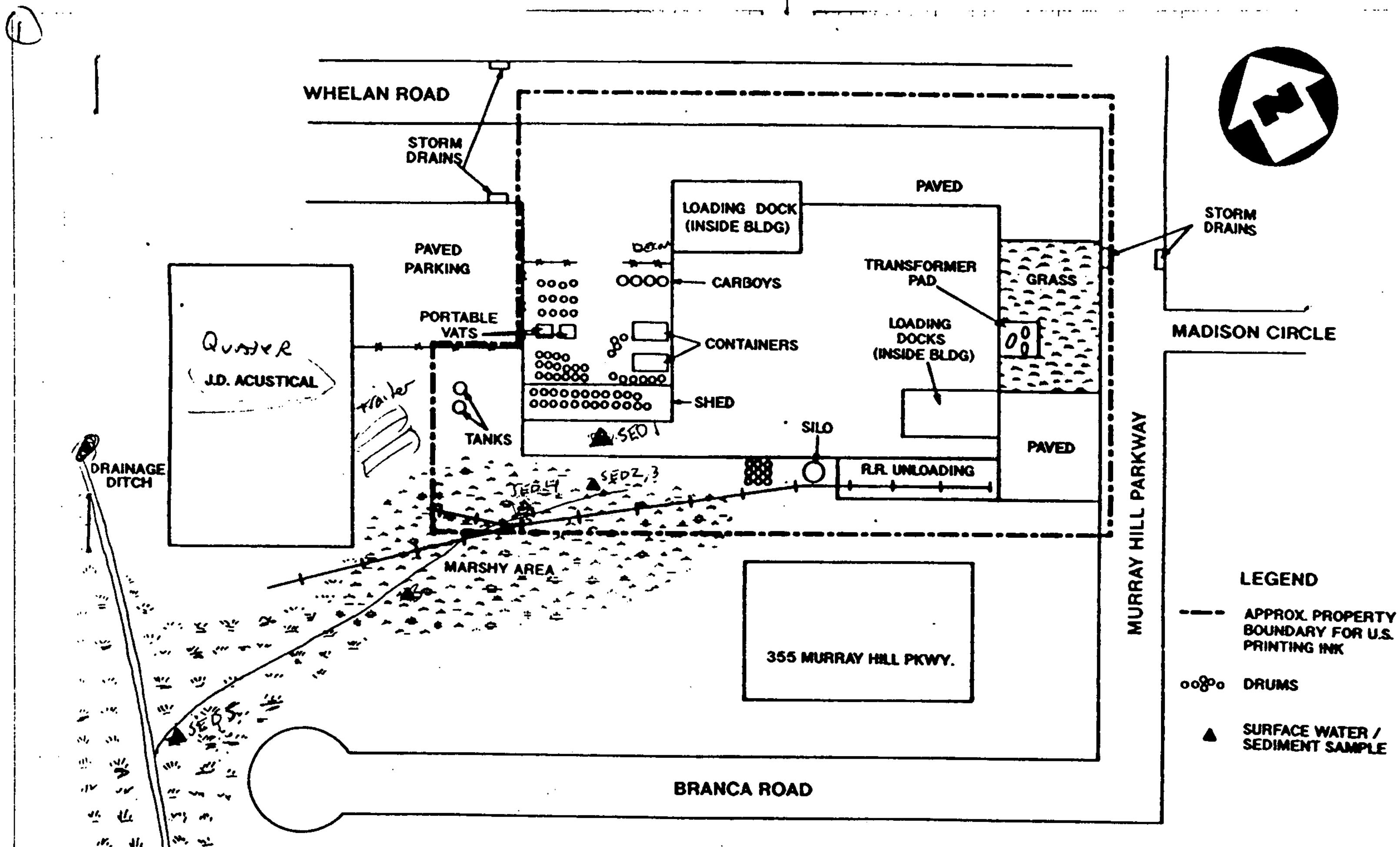


FIGURE 2

PROPOSED SAMPLE LOCATION MAP

MURRAY HILL PARKWAY SITE, E. RUTHERFORD, N.J.

NOT TO SCALE

of Thunderstorms.
and Ed Cadell
can contact
ober.

Initial/Date
7/15/92
7/15/92
7/15/92
07/15/92
7/15/92

explain and

mental Affairs
Technology
ayer

Murray Hill Parkway Site - JDT8
SIP Sampling Event
East Rutherford, New Jersey

July 15, 1992

weather - Humid, Approximately 92° F. Threat of Thunderstorms.

1010 Arrive on site. Meet with T. Donvito, L. Lepore, and Ed Cappell of U.S. P.I. No splits. Informed them that they can contact Ben Conetta for a copy of reports in October.

NUS Personnel	Responsibility	Initial/Date
D. Foerter	Site Mgr.	DF 7/15/92
J. Wagner	Site Safety Officer	JW 7/15/92
A. Culmone	SMO	AC 7/15/92
K Campbell	Sampler	KC 07/15/92
C. Barnes	Sampler	CB 7/15/92

All personnel have read and understand the workplan and applicable QA. Requirements

Non NUS Personnel	Title/Organization	
Thomas Donvito	USPI	Mgr. Environmental Affairs
Lawrence Lepore	USPI	Vice President - Technology
Ed Cappell	USPI	Plant Manager

Dennis Foerter 7/15/92

(3) Murray Hill Parkway Site J078 7/15/92

Equipment	EPA #	Background Reading
HNu	729627	0ppm
OVA	729620	0ppm
Monitor 4	734665	12 counts per minute
Cameras	734744, 734745	

1040 Setting up Decon Area

1125 J. Wagner Conducts Site Safety Tailgate meeting

1200 Depart for SED1 Location (surface soil) MS/MSD

1205 Pb Sb K. Cambell collecting surface soil sample SED1

No Readings on OVA or HNu above Background from sample

Surface soil sample collected approximately 44 feet and ~~?~~ 30° from Above Ground Tank #6. Surface soil sample collected from a depth of 0-6 inches

1215 Head for Decon Pad

1220 HNu no longer operative

[signature] 7/15/92

Murray Hill Parkway Site J078 7/15/92 (4)

Anthony Colarusso reports Rin 1 (trowel) collected at 1220

1230 Depart for Sediment Sample SED2, SED3 Location

collected approx 22 feet and 70° from Aboveground tank Tank # 6.

1245 Pb Sb C. Barnes collecting SED2, and Duplicate SED3 from drainage Ditch adjacent Above ground Tanks and stacked empty drums

Readings of up to 10 ppm on OVA (probably due to swamp gas) were obtained when disturbing sediment.

1255 Depart For Decon Pad

1312 Depart for Sediment Sample SED 4 Location

Readings initially up to 16 ppm on OVA. Subsequent screening indicated no readings above background

1325 P20 S20 K. Campbell collecting Sediment Sample SED4 approximately 48 feet and 300° from Aboveground Tank #5

Readings up to 7 ppm in bowl; 0 ppm in breathing zone

[signature] 7/15/92

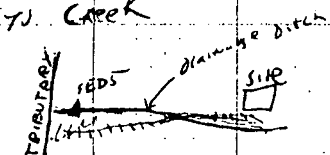
(7) Murray Hill Parkway Site J078 7/15/92

1420 Arrive at SED5 Location

1428 ~~P22 S22~~ P21 S21 7/15/92 Picture of drainage ditch within wetlands

1430 ~~P23 S23~~ P22 S22 7/15/92 C. Barrett collecting SED5.

Sediment sample SED 5 was collected approximately 25 feet prior to the confluence of the drainage ditch and tributary to Berrys Creek



1435 SED5 collected. walk back to Suburban and drive back to Decon pad.

Note: - SED5 was not collected on the site property -

1500 Depart decon area to purchase Baking Soda for neutralization of Acids, while crew cleans up and breaks down Decon pad.

[signature] 7/15/92

Murray Hill Parkway Site J078 7/15/92 (8)

1600 Leave site

1615 Samples shipped to labs via Federal Express

organics: ITAS/Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Attn: Scott Harris
Fed Ex Airbill No.: 4306319032

inorganics: Data Chem Labs
960 W. Levoy Drive
Salt Lake City, UT 84123
Attn: Steve Black
Fed Ex Airbill No.: 4306319021

CASE NO. 18460

[signature] 7/15/92

Murray HILL PARKWAY Site
EAST Rutherford, New Jersey
PHOTOGRAPH LOG - July 15, 1992

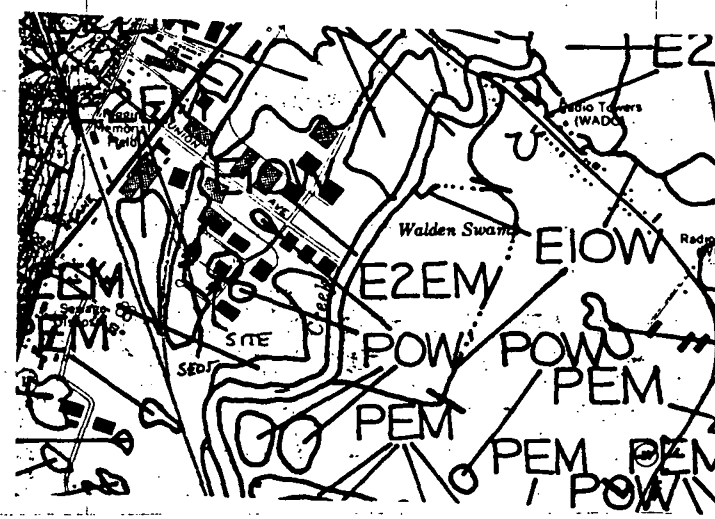
All photos taken by Dennis Foerter

Photo Number	TIME	DESCRIPTION
$1P_{18}S_{18}$	1205	K. Campbell collecting ~~Cement~~ Soil Sample J078-SED1 ~~Cont sample~~
$1P_{19}S_{19}$	1245	C. Barrow collecting Sediment Sample J078-SED2 and Duplicate sample J078-SED3
$1P_{20}S_{20}$	1325	K. Campbell collecting Sediment sample J078-SED4
$1P_{21}S_{21}$	1408	Picture of Drainage Ditch within wetland?
$1P_{22}S_{22}$	1430	C. Barrow collecting sediment Sample. J078-SED5

General Notes:

- Mr. Donvito accompanied us throughout the inspection and staked out all on site sampling locations (J078-SED1-4)
- Compass readings may be off, as several large metallic objects existed in the area of sample locations, thus justifying the need for wooden stakes to Document Sample Locations.
- Due to Location of site (industrial) and the fact that the area is composed of a wetland in which fill was deposited over, it was decided that an adequate background soil sample could not be collected.
- The area of where the wastes were previously stored is fenced with a gate that is apparently locked after hours

* The following National Wetland Inventory documents the approximate sample location of sediment sample J078-SED5



REFERENCE NO. 12

J028

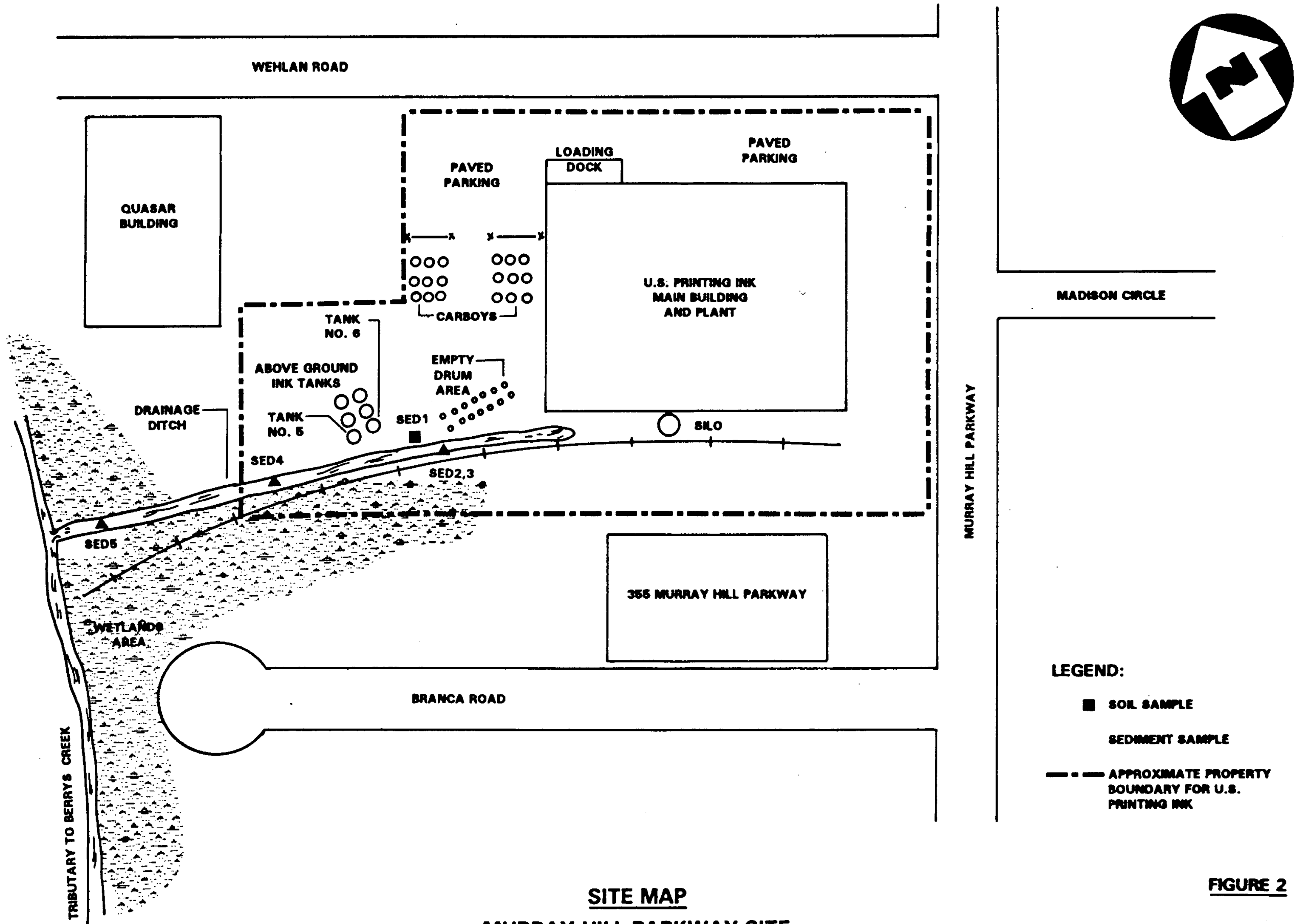


FIGURE 2

SITE MAP

MURRAY HILL PARKWAY SITE

EAST RUTHERFORD, N.J.

(NOT TO SCALE)

NOTE: SAMPLE LOCATIONS ARE APPROXIMATE

TABLE 1
SAMPLE DESCRIPTIONS
MURRAY HILL PARKWAY SITE
EAST RUTHERFORD, NEW JERSEY
CASE NO. 18460

Sample Number	CLP Organic Sample Number	CLP Inorganic Sample Number	Collection Time	Sample Type	Sample Location
J078-SED1*	BKD93	MBHK74	1205	Soil	Surface soil sample collected at a bearing of 30° and a distance of 14 feet from aboveground Ink Tank No. 6. Collected at a depth of 0 to 6 inches.
J078-SED2	BKD92	MBHH03	1245	Sediment	Sediment sample collected from on-site drainage ditch at a bearing of 30° and a distance of 22 feet from aboveground Ink Tank No. 6.
J078-SED3**	BKD91	MBDW99	1245	Sediment	Sediment sample collected from the same location as J078-SED2.
J078-SED4	BKD90	MBER47	1325	Sediment	Sediment sample collected from on-site drainage ditch at a bearing of 300° and a distance of 48 feet from aboveground Ink Tank No. 5.
J078-SED5	BKD89	MBEF83	1430	Sediment	Sediment sample collected from drainage ditch approximately 25 feet from the confluence of the drainage ditch to the Berrys Creek tributary.
J078-RIN1	BKD96	MBFN41	1220	Aqueous	Trowel rinsate collected in the field.
J078-RIN2	BKD95	MBHQ94	1240	Aqueous	Bowl rinsate collected in the field.

* MS/MSD - Indicates that extra sample volume was collected and shipped to the laboratory for matrix spike (MS) and matrix spike duplicate (MSD) analyses.

** Duplicate - Indicates that a sample was collected as an environmental duplicate.

Note: Wooden stakes were used by U.S. Printing Ink personnel to document on-site sample locations.

SITE NAME: MURRAY HILL PARKWAY SITE (AKA U.S. PRINTING INK)
PROJECT#: J078-SP
SAMPLING DATE: JULY 15, 1992
EPA CASE NO.: 18460   LAB: ITAS-KNOXVILLE

VOLATILES							
Sample ID No.	J078-SED1	J078-SED2	J078-SED3	J078-SED4	J078-SED5	J078-RIN1	J078-RIN2
Traffic Report No.	BKD93	BKD92	BKD91	BKD90	BKD89	BKD96	BKD95
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER
Units	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L
Dilution Factor	1	1	1	1	1	1	1
Percent Moisture	5	41	32	58	72		
Chloromethane						14	4 J
Bromomethane							
Vinyl Chloride							
Chloroethane							
Methylene Chloride						11 B	5 BJ
Acetone		97 E	97 E	40 E	62 E		
Carbon Disulfide						3 J	31
1,1-Dichloroethene							
1,1-Dichloroethane							
1,2-Dichloroethene (total)							
Chloroform							
1,2-Dichloroethane							
2-Butanone			34 J				
1,1,1-Trichloroethane							
Carbon Tetrachloride							
Bromodichloromethane							
1,2-Dichloropropane							
cis-1,3-Dichloropropene							
Trichloroethene					4 J		
Dibromochloromethane							
1,1,2-Trichloroethane							
Benzene							
trans-1,3-Dichloropropene							
Bromoform							
4-Methyl-2-Pentanone							
2-Hexanone							
Tetrachloroethene							
Toluene		1600 BE		32 BE			
1,1,2,2-Tetrachloroethane							
Chlorobenzene							
Ethylbenzene							
Styrene							
Xylenes (Total)		28 J					

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

SITE NAME: MURRAY HILL PARKWAY SITE (AKA U.S. PRINTING INK)
PROJECT#: J078-SP
SAMPLING DATE: JULY 15, 1992
EPA CASE NO.: 18460 LAB: ITAS-KNOXVILLE

SEMI-VOLATILES							
Sample ID No.	J078-SED1	J078-SED2	J078-SED3	J078-SED4	J078-SED5	J078-RIN1	J078-RIN2
Traffic Report No.	BKD93	BKD92	BKD91	BKD90	BKD89	BKD96	BKD95
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER
Units	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L
Dilution Factor/GPC Cleanup (Y/N)	20Y	5Y	10Y	10Y	10Y	1N	1N
Percent Moisture	5	41	32	58	72		
Phenol			R				R
bis(2-Chloroethyl)ether			R				R
2-Chlorophenol			R				R
1,3-Dichlorobenzene			R				R
1,4-Dichlorobenzene			R				R
1,2-Dichlorobenzene			R				R
2-Methylphenol			R				R
2,2'-Oxybis(1-Chloropropane)			R				R
4-Methylphenol			R				R
N-Nitroso-di-n-dipropylamine			R				R
Hexachloroethane			R				R
Nitrobenzene			R				R
Isophorone			R				R
2-Nitrophenol			R				R
2,4-Dimethylphenol			R				R
bis(2-Chloroethoxy)methane			R				R
2,4-Dichlorophenol			R				R
1,2,4-Trichlorobenzene			R				R
Naphthalene			R				R
4-Chloroaniline			R				R
Hexachlorobutadiene			R				R
4-Chloro-3-Methylphenol			R				R
2-Methylnaphthalene			R				R
Hexachlorocyclopentadiene			R				R
2,4,6-Trichlorophenol			R				R
2,4,5-Trichlorophenol			R				R
2-Chloronaphthalene			R				R
2-Nitroaniline			R				R
Dimethylphthalate			R				R
Acenaphthylene			R				R
2,6-Dinitrotoluene			R				R
3-Nitroaniline			R				R
Acenaphthene			R				R
2,4-Dinitrophenol			R				R
4-Nitrophenol	R		R				R
Dibenzofuran			R				R
2,4-Dinitrotoluene			R				R
Diethylphthalate			R				R
4-Chlorophenyl-phenyl ether			R				R
Fluorene			R				R
4-Nitroaniline			R				R
4,6-Dinitro-2-methylphenol			R				R
N-nitrosodiphenylamine			R				R
4-Bromophenyl-phenyl ether			R				R
Hexachlorobenzene			R				R
Pentachlorophenol			R				R
Phenanthrene			R				R
Anthracene			R				R
Carbazole			R				R
Di-n-butylphthalate			R				R

SITE NAME: MURRAY HILL PARKWAY SITE (AKA U.S. PRINTING INK)
PROJECT#: J078-SP
SAMPLING DATE: JULY 15, 1992
EPA CASE NO.: 18460 LAB: ITAS-KNOXVILLE

SEMI-VOLATILES							
Sample ID No.	J078-SED1	J078-SED2	J078-SED3	J078-SED4	J078-SED5	J078-RIN1	J078-RIN2
Traffic Report No.	BKD93	BKD92	BKD91	BKD90	BKD89	BKD96	BKD95
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER
Units	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L
Dilution Factor/GPC Cleanup (Y/N)	20Y	5Y	10Y	10Y	10Y	1N	1N
Percent Moisture	5	41	32	58	72		
Fluoranthene			R		1900 J		R
Pyrene			R		1400 J		R
Butylbenzylphthalate			R				R
3,3'-Dichlorobenzidine			R				R
Benzo(a)anthracene			R				R
Chrysene			R		1300 J		R
bis(2-Ethylhexyl)phthalate			R			2 J	R
Di-n-octylphthalate			R				R
Benzo(b)fluoranthene			R		1400 J		R
Benzo(k)fluoranthene			R				R
Benzo(a)pyrene			R				R
Indeno(1,2,3-cd)pyrene			R				R
Dibenz(a,h)anthracene			R				R
Benzo(g,h,i)perylene			R				R

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

SITE NAME: MURRAY HILL PARKWAY SITE (AKA U.S. PRINTING INK)
PROJECT#: J078-SP
SAMPLING DATE: JULY 15, 1992
EPA CASE NO.: 18460 LAB: ITAS-KNOXVILLE

PESTICIDES							
Sample ID No.	J078-SED1	J078-SED2	J078-SED3	J078-SED4	J078-SED5	J078-RIN1	J078-RIN2
Traffic Report No.	BKD93	BKD92	BKD91	BKD90	BKD89	BKD96	BKD95
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER
Units	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/L	UG/L
Dilution Factor/GPC Cleanup (Y/N)	1Y	1Y	1Y	1Y	1Y	1N	1N
Percent Moisture	5	41	32	58	72		
alpha-BHC							
beta-BHC							
delta-BHC							
gamma-BHC (Lindane)	R						
Heptachlor							
Aldrin							
Heptachlor epoxide							
Endosulfan I							
Dieldrin							
4,4'-DDE							
Endrin	R						
Endosulfan II							
4,4'-DDD					R		
Endosulfan sulfate							
4,4'-DDT	R						
Methoxychlor	R						
Endrin ketone							
Endrin aldehyde	R	R		14 E	28 EN		
alpha-Chlordane	R						
gamma-Chlordane	R						
Toxaphene							
Aroclor-1016							
Aroclor-1221							
Aroclor-1232							
Aroclor-1242		31 JN	23 J		130 EN		
Aroclor-1248							
Aroclor-1254		72 EN	51 E	89 E	180 E		
Aroclor-1260	R	R	R	R	R		

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

SITE NAME: MURRAY HILL PARKWAY
PROJECT#: J078
SAMPLING DATE: JULY 15, 1992
EPA CASE NO.: 18460
LAB NAME: DATACHEM LABORATORIES, INC.

INORGANICS Sample ID No. Traffic Report No. Matrix Units	J078-SED1 MBHK74 SOIL MG/KG	J078-SED2 MBHH03 SOIL MG/KG	J078-SED3 MBDW99 SOIL MG/KG	J078-SED4 MBER47 SOIL MG/KG	J078-SED5 MBEF83 SOIL MG/KG	J078-RIN1 MBFN41 WATER UG/L	J078-RIN2 MBHQ94 WATER UG/L
Aluminum	7840	2020	2760	5740	9680 E		
Antimony							
Arsenic	1.8	0.9 J	1.4	2.7	10.8 E		
Barium	68.7	33.2 J	36.5 J	91.6	118 J		
Beryllium				0.49 J			
Cadmium				1 J	11.2 E		
Calcium	4330	1290 J	1530	2000	5660 E		
Chromium	37.2	14.3 E	16.8 E	42.6	422 E		
Cobalt	9.3 J	2.5 J	2.2 J	8.1 J	11.7 J		
Copper	45.3	20.2 E	56.6 E	80.8 E	156 E	5.9 E	R
Iron	16900	4700	6170	32300	22800 E	52.9 E	53.6 J
Lead	106	105	72.7	153	163 E		
Magnesium	4120	936 J	1400	2230	5140 E		
Manganese	260	41.5	51.6	230	335 E	1.1 J	1.5 J
Mercury	0.54 E	0.22 E	0.21 E	0.87 E	21.7 E		
Nickel	12.1	6.2 J		15	66.5 E		25.8 J
Potassium	533 J	241 J	197 J	546 J	1900 J		
Selenium			0.24 J	0.3 J	0.98 J		
Silver					3.8 J	R	R
Sodium	239 J	752 J	506 J	420 J	7500 E	427 J	349 J
Thallium			0.23 J				
Vanadium	35.3	12.2 J	16.1	29	42.7 E		
Zinc	70.3 E	54.1 E	55.4 E	229 E	561 E		
Cyanide	6.3	10.8	7.5	12.3			

NOTES:
Blank space - compound analyzed for but not detected
E - estimated value
J - estimated value, compound present below CRDL but above IDL
R - analysis did not pass EPA QA/QC
NR - analysis not required

QUALITY ASSURED
EPA-MMB FINAL
CONTRACT LABORATORY DATA

SITE NAME: Murray Hill Pkwy.

CASE NO./SAS NO.: 18460

TYPE OF ANALYSIS (circle one):

- VOA only
- Full TCL
- Full TAL
- Full TAL and CN
- SAS/Other ________________

Sent to: HNUS

Date Sent: 11/20/92

079

RECORD OF COMMUNICATION

☐ PHONE CALL ☐ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE
☐ OTHER (SPECIFY)

(Record of item checked above)

TO:	FROM:	DATE
GEORGE KARRAS EPA/MMB	RSCC/ESAT	08/25/92 TIME

SUBJECT

CLP Organic Data Packages for Quality Assurance Review

SUMMARY OF COMMUNICATION

Attached are the following CLP Organic/SAS Data Packages to be reviewed for Quality Assurance.

SITE	CASE/SAS NO.	LABORATORY	MATRIX	NO. of SAMPLES
MURRAY HILL PKWY. SITE APER/SSI	18460	ITSTU	SOIL WATER	5 2

CONCLUSIONS, ACTION TAKEN OR REQUIRED

RECEIVED
OCT 30 1992

INFORMATION COPIES
TO:

EPA Form 1300-6 (7-72) REPLACES EPA HQ FORM 5300-3 WHICH MAY BE USED UNTIL SUPPLY IS EXHAUSTED.

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE # 18460 SDG # BKD89 LAB: ITAS-Knoxville SITE Murray Hill Parkway Site

The current Functional Guidelines for evaluating organic data have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-detects), "R" (unusable), or "JN" (presumptive evidence for the presence of the material at an estimated value). All action is detailed on the attached sheets.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Reviewer's Signature: Susan Lenczyk Date: 09/29/1992

Verified By: ______________________ Date: __/__/19__

CLP DATA ASSESSMENT

1. HOLDING TIMES:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following analytes in the samples shown were qualified because of holding time:

VOA - Samples BKD89, 89DL, 90, 90DL, 91, 92, and 93 were analyzed 11 days after the date of collection. In BKD91, 92, and 93, all analytes except those already J'd were qualified estimated (J). In BKD89, 89DL, 90, and 90DL, all analytes would have been J'd due to holding time, but they had already been so qualified due to % moisture.

BNA - In BKD92 all analytes were qualified estimated (J) because extraction was performed more than 7 days but less than 21 days after the date of collection.

- In BKD91 and 95 all analytes were rejected because extraction was performed more than 21 days after the date of collection.

CLP DATA ASSESSMENT

2. BLANK CONTAMINATION:

Quality Assurance (QA) blanks, i.e., method, trip, field or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the samples shown were qualified with "U" for these reasons:

A) Method Blank Contamination VOA - methylene chloride in BKD89, 89DL, 90, 90DL, 91, 92, 93; toluene in BKD89, 90DL, 91, 93. BNA bis(2-ethylhexyl)phthalate in BKD 89. 2 TICs in BKD89, 90, 93.

B) Field or Rinse Blank Contamination ("water blanks" or "distilled water blanks" are validated like any other sample) VOA - carbon disulfide in BKD90, 92 BNA bis(2-ethylhexyl) phthalate in BKD91, 92.

C) Trip Blank Contamination

CLP DATA ASSESSMENT

3. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds, and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is bromofluorobenzene (BFB) and for semi-volatiles is decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error or missing, all associated data will be classified as unusable "R". The following samples shown were qualified with "R" because of tuning:

CLP DATA ASSESSMENT

4. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

A) Response Factor:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the VOA/BNA Target Compound List (TCL) must be $\geq$ 0.05 in both the initial and continuing calibrations. A value $\leq$ 0.05 indicates a serious detection and quantitation problem (poor sensitivity). If the mean RRF of the initial calibration or the continuing calibration has a response factor <0.05 for any analyte, those analytes detected in environmental samples will be qualified as estimated "J". All non-detects for those compounds will be rejected "R". The following analytes in the samples shown were qualified because of response factor:

CLP DATA ASSESSMENT

5. CALIBRATION:

B) PERCENT RELATIVE STANDARD DEVIATION (%RSD) AND PERCENT DIFFERENCE (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these QC limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J"; and non-detects are flagged "UJ". If %RSD and/or %D grossly exceed QC criteria, non-detect data may be qualified "R".

For the PESTICIDE/PCB fraction, if %RSD exceeds 20% for all analytes except for the 2 surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the samples shown were qualified for %RSD and %D:

Initial Calibration see (A) below

Continuing Calibration see (B) below

(A) - VOA - The % RSD for chloroethane in the initial calibration of 7/24/92 was recalculated by eliminating the high point (RRF200) standard relative response factor from the initial calibration curve. The recalculation does not place the % RSD below 30. The % RSD was then recalculated by eliminating the low point (RRF10). The recalculation places the % RSD below 30. However, as this compound is not detected in the associated samples, it would have to be qualified estimated (J) anyway. Therefore, the % RSD is not changed.

- chloroethane would have been qualified estimated (J) in 3KD89, 89DL, 90, 90DL, 91, 92, and 93 because the % RSD is greater than 30, but it had already been J-qualified.

(B) VOA - In all soil samples, chloromethane and vinyl chloride would have been qualified estimated (J) because the % D is greater than 25, less than 90, but they had already been so qualified.

(A) BNA - The % RSD for 2,4-dinitrophenol in both initial calibrations was recalculated by eliminating the high point (RRF160) standard relative response factor from the initial calibration curve. The recalculation does not place the % RSD below 30. The % RSD was then recalculated by eliminating the low point (RRF20). The recalculation places the % RSD below 30. However, as this compound is not detected in the associated samples it would have to be qualified estimated (J) anyway. Therefore the % RSD is not changed.

- for BKD93 and 96, 2,4-dinitrophenol was qualified estimated (J) because the percent RSD in the associated initial calibrations was greater than 30, less than 90. This compound would have been J'd in the remaining samples for the same reason, but it had previously been J'd or R'd.

(B) BNA - for BKD93, 2-nitroaniline and 2,2'-oxybis (1-chloropropane) were qualified estimated (J) because the % D in the associated continuing calibration was greater than 25, less than 90. These compounds would have been J'd for the same reason in BKD92, but they had already been J-qualified.

(9) Pesticides - for BKD93 aldrin was qualified estimated (J) because the % RSD was greater than 20 in the initial analyses of Individual Standards A and B. Aldrin would have been J'd for this reason in BKD 89, 90, 91, and 92, but it had already been J'd.

CLP DATA ASSESSMENT

6. SURROGATES/SYSTEM MONITORING COMPOUNDS (SMC):

All samples are spiked with surrogate/SMC compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate/SMC concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below. The following analytes for the samples shown were qualified because of surrogate/SMC recovery:

Pesticides/PCBs - In BKD 91 and 92 all analytes except those already J'd or rejected (R) were qualified estimated (J) because recovery for both surrogates was below QC limits (but greater than 10). Analytes in BKD 89 and 90 would have been J'd for this reason, but they had already been so qualified due to % moisture.

CLP DATA ASSESSMENT

7. INTERNAL STANDARDS PERFORMANCE:

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to 100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ± 30 seconds from the associated continuing calibration standard. If the area count is outside the -50% to 100% range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated "J", and all non-detects as "UJ"only if the IS area is <50% Non-detects are qualified as "R" if there is a severe loss of sensitivity (<25% of associated IS area counts).

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction. The following analytes in the samples shown were qualified because of internal standard performance:

VOA - The internal standard area count for chlorobenzene was below QC limits in BKD89 and 90. All analytes quantitated with this internal standard would have been qualified estimated (J), but they had already been so qualified.

CLP DATA ASSESSMENT

8. COMPOUND IDENTIFICATION:

A) VOLATILE AND SEMI-VOLATILE FRACTIONS:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound, and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the Tentatively Identified Compounds (TICs) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. The following analytes in the samples shown were qualified for compound identification:

B) PESTICIDE FRACTION:

The retention time of the reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10 ng/ml in the final sample extract. The percent difference (%D) of the positive results obtained on the two GC columns would be ≤25%. The following analytes in the samples shown were qualified because of compound identification:

Pesticides /PCBs - The following compounds in the following samples were rejected (R) because the %D ~~for~~ between the two columns for compounds that had positive results was greater than 90: 4,4'-DDD in BKD89; endrin aldehyde in BKD92, 93; gamma-BHC, endrin, 4,4'-DDT, methoxychlor, alpha-Chlordane, and gamma-Chlordane in BKD93; Aroclor-1260 in BKD 89, 90, 91, 92, 93;

- The following compounds in the following samples were qualified N, indicating presumptive evidence of their presence, because the %D was greater than 50, less than 90: endrin aldehyde in BKD89; Aroclor-1242 in BKD 89, 92; Aroclor-1254 in BKD92. These compounds would also have been qualified estimated (J), but they had previously been so qualified.
- The following compounds in the following samples would have been qualified estimated (J) because the %D was greater than 25, less than 50, but they had previously been so qualified: Aroclor-1254 in BKD 89, 90, 91; Aroclor-1242 in BKD91.

9. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for some additional qualification of the data. The following analytes, for the samples shown, were qualified because of MS/MSD:

The non-detected value of 4-Nitrophenol was rejected "R" in semivolatile organics analysis sample BKD93 because the associated MS/MSD samples (BKD93MS and BKD93MSD) both show < 10% recovery for this compound.

DATA REJECTION SUMMARY

Rev. Date: 2/12/92

Type of Review: Total

Date: ______

Case/SAS No.: 18460

Site Name: Murray Hill Parkway Site

Lab Name: ITAS- Knoxville

Reviewer's Initials: sl

Number of Samples: 7

Analytes Rejected Due to Exceeding Review Criteria for:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	ID	Internal Standards	Other	Total # Samples	Total # Rejected/ Total # in all Samples
Acids (14)		28/2						7	28/98
B/N (50)		100/2		mb 1/1 rb 2/2				7	101/350
VOA ~~(34)~~ 33				mb 11/7 rbs 2/2				9	11/297
Pest (21)					9/3			7	9/147
PCB (7)					5/5			7	5/49
TCDD (1)									

Note: Asterisk (*) indicates additional exceedances of review criteria.

Analytes Estimated Due to Exceeding Review Criteria for:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	ID	Internal Standards	% moisture Other	Total # Samples	Total # Rejected/ Total # in all Samples
Acids (14)		14/1	IC 2/2				28/2	7	44/98
B/N ~~(49)~~ 50		50/1	cc 2/1				96/2	7	148/350
VOA (33)		97/3					131/4	9	228/297
Pest (21)	41/2		1/1				41/2	7	83/147
PCB (7)	10/2						12/2	7	22/49
TCDD (1)									

Note: Asterisk (*) indicates additional exceedances of review criteria.

DPO: [ ] ACTION [ ] FYI Region 2

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO. 18460 LABORATORY ITAS - Knoxville

SDG NO. BKD89 DATA USER HALLIBURTON NUS

SOW ______ REVIEW COMPLETION DATE September 29, 1992

NO. OF SAMPLES 2 WATER 5 SOIL ______ OTHER

REVIEWER [ ] ESD [ ] ESAT [ ] OTHER, CONTRACT/CONTRACTOR HALLIBURTON NUS

	VOA	BNA	PEST	OTHER
HOLDING TIMES	M	Z	O	
GC-MS TUNE/GC PERFORMANCE	O	O	O	
INITIAL CALIBRATIONS	O	X	X	
CONTINUING CALIBRATIONS	O	X	O	
FIELD BLANKS ("F" = not applicable)	F	F	F	
LABORATORY BLANKS	X	X	O	
SURROGATES	O	O	M	
MATRIX SPIKE/DUPLICATES	O	O	O	
REGIONAL QC ("F" = not applicable)	F	F	F	
INTERNAL STANDARDS	O	O	O	
COMPOUND IDENTIFICATION	O	O	Z	
COMPOUND QUANTITATION	O	O	O	
SYSTEM PERFORMANCE	X	X	Z	
OVERALL ASSESSMENT	M	Z	Z	

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as estimated.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: ______

AREAS OF CONCERN: ______

3/90

02M01.8

SOP NO. HW-6
Revision #8

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

BY: Leon Lazarus Date: Jan 2 1992
Leon Lazarus, Environmental Scientist
Toxic and Hazardous Waste Section

BY: George Karras Date: January 3 1992
George Karras, Chemist
Toxic and Hazardous Waste Section

BY: Stelios Gerazounis Date: 1/3/1992
Stelios Gerazounis, Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: Kevin W. Kubik Date: 1/3/92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: Robert Runyon Date: 1/7/92
Robert Runyon, Chief
Monitoring Management Branch

	YES	NO	N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 18460 LAB: ITAS - Knoxville

SITE: Murray Hill Parkway Site

1.0 Data Completeness and Deliverables

		YES	NO	N/A
1.1	Have any missing deliverables been received and added to the data package?	[ ]		✓

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of the reviewer narrative.

		YES	NO	N/A
1.2	Was SMO CCS checklist included with data package?	[ ]	✓	

2.0 Cover Letter SDG Narrative

		YES	NO	N/A
2.1	Is the Narrative or Cover Letter Present?	[✓]		
2.2	Are Case Number and/or SAS number contained in the Narrative or Cover Letter?	[✓]		

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any BNA analyses and Part C for Pesticide/PCB analyses.

Does this package contain:

	YES	NO
VOA Data?	✓	
BNA Data?	✓	
Pesticide/PCB Data?	✓	

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1. Traffic Reports and Laboratory Narrative

1.1 Are Traffic Report Forms present for all samples? [✓] __ __

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting quality of the data? __ [✓] __

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50-90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

3KD89, 89DL, 90, 90DL

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

YES NO N/A

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ✓ [ ] ___

Water
If unpreserved, aqueous samples maintained at 4°C which are to be analyzed for aromatic hydrocarbons must be analyzed within 7 days of collection. If preserved with HCl (pH<2) and stored at 4°C then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or not samples were preserved.

Soil
The holding time for soils is 10 days.

Table of Holding Time Violations

Sample ID	Sample Matrix	Preserved?	Date Sampled	(see Traffic Report) Date Lab Received	Date Lab Analyzed
BKD89	SOIL	NA	7/15/92	7/16/92	7/26/92
BKD89DL					
BKD90					
BKD90DL					
BKD91					
BKD92					
BKD93					

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non-detect data are unusable "R".

	YES	NO	N/A

3.0 System Monitoring Compound (SMC) Recovery (Form II)

3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:

	YES	NO	N/A
a. Low Water	[✓]	___	___
b. Low Soil	[✓]	___	___
c. Med Soil	[ ]	___	✓

3.2 Are all the VOA samples listed on the appropriate SMC Recovery Summary for each of the following matrices:

	YES	NO	N/A
a. Low Water	[✓]	___	___
b. Low Soil	[✓]	___	___
c. Med Soil	[ ]	___	✓

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessment.

	YES	NO	N/A
3.3 Were outliers marked correctly with an asterisk?	[ ]	___	✓

ACTION: Circle all outliers in red.

	YES	NO	N/A
3.4 Was one or more VOA SMC recovery outside of contract specifications for any sample or method blank?	___	[✓]	___
If yes, were samples re-analyzed?	[ ]	___	✓
Were method blanks re-analyzed?	[ ]	___	✓

YES NO N/A

ACTION: If recoveries are > 10% but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".
2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.
3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any SMC recovery is < 10%:

1. Flag all positive results as estimated "J".
2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ [✓] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and note errors in the data assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [✓] ___ ___

	YES	NO	N/A
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[ ]		✓
b. Low Soil	[✓]		
c. Med Soil	[ ]		✓

ACTION: If any matrix spike data are missing, take action specified in 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soil
NA out of 10	0 out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soil
NA out of 5	0 out of 5

ACTION: No action is taken based on MS/MSD data alone. However, using informed professional judgement, the MS/msd results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[✓]		
5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each SDG or every 20 samples of similar matrix (low water, low soil, medium soil), whichever is more frequent?	[✓]		

	YES	NO	N/A
5.3 Has a VOA method/instrument blank been analyzed at least once every 12 hours or each concentration level and GC/MS system used?	[✓]	___	___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

5.4 Chromatography: review the blank raw data chromatograms (RICs), quant reports or data system printouts and spectra.

	YES	NO	N/A
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___

ACTION: Use professional judgement to determine the effect of the data.

6.0 <u>Contamination</u>

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are <u>not</u> used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture when necessary.	✓	[ ]	___
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?	✓	[ ]	___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

BKD96 - trowel rinsate - associated with all soil samples.
BKD95 - bowl - not associated with volatiles portion of soil samples.

YES NO N/A

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field blanks and trip blanks must be qualified for SMC, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

	Sample Conc. > CRQL but < 10 x blank value	Sample Conc. < CRQL & < 10 x blank value	Sample Conc. > CRQL & > 10 x blank value
Methylene Chloride Acetone Toluene 2-Butanone	Flag sample result with a "U"	Report CRQL and qualify "U"	No qualification is needed
	Sample Conc. > CRQL but < 5 x blank value	Sample Conc. < CRQL & < 5 x blank value	Sample Conc. > CRQL & > 5 x blank value
Other Contaminants	Flag sample result with a "U"	Report CRQL and qualify "U"	No qualification is needed

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

	YES	NO	N/A
ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).			
6.3 Are there field/rinse/equipment blanks associated with every sample?	[✓]	___	___
ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.			

7.0 <u>GC/MS Instrument Performance Check (Form V)</u>

	YES	NO	N/A
7.1 Are the GC/ms Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)?	[✓]	___	___
7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for BFB provided for each twelve hour shift?	[✓]	___	___
7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

YES NO N/A

ACTION: List date, time, instrument ID and sample analysis for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS
______	______	____________	______________
______	______	____________	______________
______	______	____________	______________

ACTION: If the lab cannot provide missing data, reject "R" all data generated outside an acceptable 12 hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95? [✓] __ __

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used? [✓] __ __

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) __ [✓] __

	YES	NO	N/A
7.7 Have the appropriate number of significant figures (two) been reported?	[✓]	___	___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

	YES	NO	N/A
7.8 Are the spectra of the mass calibration compound acceptable?	[✓]	___	___

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:

	YES	NO	N/A
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates	[✓]	___	___
c. Blanks	[✓]	___	___

8.2 Are the VOA Reconstructed Ion Chromatograms (RICs), the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?

	YES	NO	N/A
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates	[✓]	___	___
c. Blanks	[✓]	___	___

ACTION: If any data are missing, take action specified in 3.2 above.

		YES	NO	N/A
8.3	Are the response factors shown in the Quant Report?	[✓]	___	___
8.4	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[✓]	___	___
	Resolution?	[✓]	___	___
	Peak shape?	[✓]	___	___
	Full-scale graph (attenuation)?	[✓]	___	___
	Other: ________________	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/Non-Compliance".

8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___

	YES	NO	N/A
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the compound) or changed to non-detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria in 8.6, 8.7 and 8.8.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

9.0 Tentatively Identified Compounds (TICs)

	YES	NO	N/A
9.1 Are all TIC Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[✓]	___	___
9.2 Are the mass spectra for TICs and associated "best match" spectra included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[ ]	___	✓

ACTION: If any TIC data are missing, take action as specified in 3.2 above.

ACTION: Add "JN" qualifier if missing.

	YES	NO	N/A
9.3 Are any TCL compounds (from any fraction) listed as a TIC compound (example: 1,2-dimethylbenzene is xylene-a VOA TCL analyte - and should not be reported as a TIC)?	___	[✓]	___

ACTION: Flag as rejected "R" any TCL compound listed as a TIC.

	YES	NO	N/A
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined than an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.

ACTION: Also, when a compound is not found in any blank, but is detected in a sample as a suspected artifact of a common laboratory contaminant, the result should be qualified a unusable "R". (i.e. Common Lab Contaminants: CO_2 (m/e 44), Siloxanes (m/e 73), Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products - see Functional Guidelines for further guidance.)

	YES	NO	N/A
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I results. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[✓]	___	___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including in the summary package.

	YES	NO	N/A
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms and data system printouts (Quant Reports) present for the initial and continuing calibration?	[✓]	___	___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

YES NO N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction at concentrations of 10, 20, 50, 100, and 200 ug/l? Are there separate calibrations for low water/med soils and low soil samples? [✓] ___ ___

ACTION: If any calibration standard forms are missing, take action as specified in 3.2 above.

12.2 Were all low level soil standards, blanks and samples analyzed by heated purge? [✓] ___ ___

ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" and non-detects "R".

12.3 Are response factors stable for VOAs over the concentration range of the calibration (% Relative Standard Deviation (RSD) < 30%)? [__] ✓ ___

ACTION: Circle all outliers in red.

NOTE: Although 11 VOA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

ACTION: If the %RSD is > 30, qualify associated positive results for that analyte "J" and non-detects using professional judgement. When %RSD > 90, flag all non-detects for the analyte "R" (unusable).

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria.

12.4 Are the RRFs above 0.05? [✓] ___ ___

ACTION: Circle all outliers in red.

ACTION: If any RRF are < 0.05, qualify associated non-detects "R" and flag associated positive data as estimated "J".

	YES	NO	N/A
12.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.)	___	[√]	___

13.0 GC/MS Continuing Calibration (Form VII)

	YES	NO	N/A
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?	[√]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[√]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

____

____

____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, cal lab for explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as "R" (unusable).

	YES	NO	N/A
13.3 Do any volatile compounds have a % Difference (%D) between the initial and continuing RRF which exceeds the ± 25% criteria?	√	[ ]	___

ACTION: Circle all outliers in red.

ACTION: Qualify both positive and non-detect results for the outlier compound(s) as estimate "J". When %D is >90, reject "R" all non-detects for that analyte.

	YES	NO	N/A

13.4 Do any volatile compounds have a RRF < 0.05? ✓ [___]

ACTION: Circle all outliers in red.

ACTION: If the RRF is < 0.05, qualify associated non-detects as "R" (unusable) and "J" associated positive values.

13.5 Are there any transcription/calculation errors in the reporting of average response factors (RRFs) or % Difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call the lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration? [__] ✓ ___

ACTION: List all of the outliers below.

Sample #	Internal Std.	Area	Lower Limit	Upper Limit
BKD89	CBZ	16,509	23,286	93,146
BKD90	CBZ	21,600	23,286	93,146

(Attach additional sheets if necessary.)

YES NO N/A

ACTION: 1. If the internal standard (IS) area count is outside the upper or lower limit, flag "J" all positive results quantitated with this IS.

2. Non-detects associated with the IS area counts > 100% should not be qualified.

3. If the IS area is below the lower limit (<50%), qualify associated non-detect values "J". If extremely low are counts are reported, (<25%) or if performance exhibits a major drop-off, flag all associated non-detect values "R" (unusable).

14.2 Are the retention times of the internal standards within 30 seconds (.5) of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds (.5).

15.0 <u>Field Duplicates</u>

15.1 Were any field duplicates submitted for VOA Analysis? [__] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

BKD91+92 – BKD91 has 32% moisture, whereas BKD92 has 41% moisture. BKD91 and 92 showed the presence of toluene, which was also present in the associated blank. In BKD91 toluene was qualified not detected, but in BKD92 toluene could not be qualified not detected because it was present at more than [illegible]

YES NO N/A

PART B: BNA ANALYSES

1. Traffic Reports and Laboratory Narrative

1.1 Are Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting quality of the data? ___ [✓] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50-90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from collection date to date of extraction, been exceeded? ___ [ ] ___

Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within seven days of collection. Extracts must be analyzed within 40 days of the date of extraction.

YES NO N/A

Table of Holding Time Violations

Sample ID	Sample Matrix	Date Sampled	Date Lab Received	(see Traffic Report) Date Extracted	Date Lab Analyzed
BKD91	SOIL	7/15/92	7/16/92	8/13/92	8/14/92
BKD92	SOIL	7/15/92	7/~~30~~ 16/92	7/30/92	8/17/92
BKD95	WATER	7/15/92	7/16/92	8/11/92	8/12/92

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non-detect data are unusable "R".

3.0 Surrogate Recovery (Form II)

3.1 Are the BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:

		YES	NO	N/A
a.	Low Water	[✓]	___	___
b.	Low Soil	[✓]	___	___
c.	Med Soil	[✓]	___	___

YES NO N/A

3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:

a. Low Water [✓] __ __

b. Low Soil [✓] __ __

c. Med Soil [✓] __ __

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessment.

3.3 Were outliers marked correctly with an asterisk? [✓] __ __

ACTION: Circle all outliers in red.

3.4 Were two or more base-neutral <u>or</u> acid surrogate recoveries out of specification for any sample or method blank? _ _ _

[__] __

If yes, were samples re-analyzed? [__] ✓ __

Were method blanks re-analyzed? [__] __ ✓

ACTION: If all BNA surrogate recoveries are >10% but two within the base-neutral or acid fraction do not meet SOW specifications, <u>for the affected fraction only (i.e. base neutral or acid compounds)</u>:

1. Flag all positive results estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" when recoveries are less than the lower acceptance limit.

3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

YES NO N/A

If any base-neutral or acid recovery is < 10%:

1. Positive results for the fraction with < 10% surrogate recovery are qualified estimated "J".

2. Non-detects for that fraction should be qualified as unusable "R".

Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ [✓] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and note errors in the data assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? [✓] ___ ___

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

a. Low Water [~~✓~~] ___ ✓

b. Low Soil [✓] ___ ___

c. Med Soil [✓] ___ ___

ACTION: If any matrix spike data are missing, take action specified in 3.2 above.

YES NO N/A

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soil (Low)	Soil (Med)
N/A out of 22	4 out of 22	5 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soil (Low)	Soil (Med)
NA out of 11	0 out of 11	9 out of 11

ACTION: No action is taken based on MS/MSD data alone. However, using informed professional judgement, the MS/msd results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? [✓] __ __

5.2 Frequency of Analysis:

Has a reagent/method blank analysis been reported per 20 samples of similar matrix, or concentration level, and for each extraction batch? [✓] __ __

5.3 Has a BNA method blank been analyzed for each GC/MS system used? [✓] __ __
(See SOW p. D-59/SV, Section 8.7)

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, use professional judgement to determine if the associated sample data should be qualified.

YES NO N/A

5.4 Chromatography: review the blank raw data chromatograms (RICs), quant reports or data system printouts and spectra.

Is the chromatographic performance (baseline stability) for each instrument acceptable for BNAs? [✓] __ __

ACTION: Use professional judgement to determine the effect of the data.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture when necessary. ✓ [ ] __

6.2 Do any field/trip/rinse blanks have positive BNA results (TCL and/or TIC)? ✓ [ ] __

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.) See below.

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, spectral, instrument performance or calibration QC problems.

SBLK1 is associated with BKD96 (rinsate). Cannot qualify blanks with blanks.
SBLK2 is associated with BKD 89, 90, 93.
SBLK3 is associated with BKD92.
SBLK4 is associated with BKD95 (rinsate). Cannot qualify blanks with blanks.
SBLK5 is associated with BKD91.

RINSATES - BKD 95 + 96 are associated with all soil samples.

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

	Sample Conc. > CRQL but < 10 x blank value	Sample Conc. < CRQL & < 10 x blank value	Sample Conc. > CRQL & > 10 x blank value
Common Phthalate Esters	Flag sample result with a "U"	Report CRQL and qualify "U"	No qualification is needed
	Sample Conc. > CRQL but < 5 x blank value	Sample Conc. < CRQL & < 5 x blank value	Sample Conc. > CRQL & > 5 x blank value
Other Contaminants	Flag sample result with a "U"	Report CRQL and qualify "U"	No qualification is needed

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

	YES	NO	N/A
7.0 GC/MS Instrument Performance Check (Form V)			
7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Decafluorotriphenylphospine (DFTPP)?	[✓]	___	___
7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for DFTPP provided for ea. twelve hour shift?	[✓]	___	___
7.3 Has an instrument performance solution been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List date, time, instrument ID and sample analysis for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS
______	______	______________	__________________
______	______	______________	__________________
______	______	______________	__________________

ACTION: If the lab cannot provide missing data, reject "R" all data generated outside an acceptable 12 hour calibration interval.

ACTION: If mass assignment is in error, qualify all flag all associated sample data as "R" (unusable).

	YES	NO	N/A
7.4 Have the ion abundances been normalized to m/z 198?	[✓]	___	___

	YES	NO	N/A
7.5 Have the ion abundance criteria been met for each instrument used?	[✓]	___	___

YES NO N/A

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ [√] ___

7.7 Have the appropriate number of significant figures (two) been reported? [√] ___ ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

7.8 Are the spectra of the mass calibration compound acceptable? [√] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified or rejected.

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate [√] ___ ___

b. Matrix spikes and matrix spike duplicates [√] ___ ___

c. Blanks [√] ___ ___

		YES	NO	N/A
8.2	Has GPC cleanup been performed on all soil/sediment sample extracts?	[✓]	___	___
8.3	Are the BNA Reconstructed Ion Chromatograms (RICs), the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
	a. Samples and/or fractions as appropriate	[✓]	___	___
	b. Matrix spikes and matrix spike duplicates (mass spectra not required)	[✓]	___	___
	c. Blanks	[✓]	___	___
	ACTION: If any data are missing, take action specified in 3.2 above.			
8.4	Are the response factors shown in the Quant Report?	[✓]	___	___
8.5	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[✓]	___	___
	Resolution?	[✓]	___	___
	Peak shape?	[✓]	___	___
	Full-scale graph (attenuation)?	[✓]	___	___
	Other: ________________	[ ]	___	___
	ACTION: Use professional judgement to determine the acceptability of the data.			

	YES	NO	N/A
8.6 Are the lab-generated standard mass spectra of the identified BNA compounds present for each sample?	[✓]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/Non-Compliance". If spectra are missing, reject all positive data.

	YES	NO	N/A
8.7 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.8 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.9 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the compound) or changed to non-detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria in 8.6, 8.7 and 8.8.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

9.0 Tentatively Identified Compounds (TICs)

	YES	NO	N/A
9.1 Are all TIC Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[✓]	___	___

	YES	NO	N/A
9.2 Are the mass spectra for TICs and associated "best match" spectra included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___

ACTION: If any TIC data are missing, take action as specified in 3.2 above.

ACTION: Add "JN" qualifier if missing.

	YES	NO	N/A
9.3 Are any TCL compounds (from any fraction) listed as a TIC compound (example: 1,2-dimethylbenzene is xylene-a VOA TCL analyte - and should not be reported as a TIC)?	___	[✓]	___

ACTION: Flag as rejected "R" any TCL compound listed as a TIC.

	YES	NO	N/A
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined than an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is detected in a sample as a suspected artifact of a common laboratory contaminant, the result should be qualified a unusable "R".

	YES	NO	N/A
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I results. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[✓]	___	___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including in the summary package.

	YES	NO	N/A
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms and data system printouts (Quant Reports) present for the initial and continuing calibration?	[✓]	___	___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

	YES	NO	N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction? [✓] ___ ___

ACTION: If any calibration standard forms are missing, take action as specified in 3.2 above.

12.2 Are response factors stable for BNAs over the concentration range of the calibration (% Relative Standard Deviation (RSD) < 30%)? [ ] ✓ ___

ACTION: Circle all outliers in red.

NOTE: Although 20 BNA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

ACTION: If the %RSD is > 30, qualify associated positive results for that analyte "J" and non-detects using professional judgement. When %RSD > 90, flag all non-detects for the analyte "R" (unusable).

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria.

12.3 Are the RRFs above 0.05? [✓] ___ ___

ACTION: Circle all outliers in red.

ACTION: If any RRF are < 0.05, qualify associated non-detects "R" and flag associated positive data as estimated "J".

12.4 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors in data assessments.

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction? [✓] ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

____

____

____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, cal lab for explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as "R" (unusable).

13.3 Do any volatile compounds have a % Difference (%D) between the initial and continuing RRF which exceeds the ± 25% criteria? ✓ [ ] ___

ACTION: Circle all outliers in red.

ACTION: Qualify both positive and non-detect results for the outlier compound(s) as estimate "J". When %D is >90, reject "R" all non-detects for that analyte.

YES NO N/A

13.4 Do any BNA compounds have a RRF < 0.05? ___ [✓] ___

ACTION: Circle all outliers in red.

ACTION: If the RRF is < 0.05, qualify associated non-detects as "R" (unusable) and "J" associated positive values.

13.5 Are there any transcription/calculation errors in the reporting of average response factors (RRFs) or % Difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call the lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration? [✓] ___ ___

ACTION: List all of the outliers below.

Sample #	Internal Std.	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

YES NO N/A

ACTION: 1. If the internal standard (IS) area count is outside the upper or lower limit, flag "J" all positive results quantitated with this IS.

2. Non-detects associated with the IS area counts > 100% should not be qualified.

3. If the IS area is below the lower limit (<50%), qualify associated non-detect values "J". If extremely low are counts are reported, (<25%) or if performance exhibits a major drop-off, flag all associated non-detect values "R" (unusable).

14.2 Are the retention times of the internal standards within 30 seconds (.5) of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds (.5).

15.0 <u>Field Duplicates</u>

15.1 Were any field duplicates submitted for BNA Analysis? [✓] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

BKD91 + 92 - Results very similar, but % moisture differs: BKD91 → 32%; BKD92 → 41%.

YES NO N/A

PART C: PESTICIDE/PCB ANALYSIS

1.0 Traffic Reports and Laboratory Narrative

1.1 Are Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting quality of the data? ___ [✓] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50-90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any Pest./PCB technical holding times, determined from collection date to date of extraction, been exceeded? ___ [✓] ___

Water and soil samples for Pesticide/PCB analysis must be started within seven days of the date of collection. Extracts must be analyzed within 40 days of the date of extraction.

YES NO N/A

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non-detect data are unusable "R".

3.0 Surrogate Recovery (Form II)

3.1 Are the Pest./PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices?

		YES	NO	N/A
a.	Low Water	[✓]	___	___
b.	Soil	[✓]	___	___

3.2 Are all the Pest./PCB samples listed on the appropriate Surrogate Recovery Summary for each of the following matrices:

		YES	NO	N/A
a.	Low Water	[✓]	___	___
b.	Soil	[✓]	___	___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessment.

3.3 Were outliers marked correctly with an asterisk? [✓] ___ ___

ACTION: Circle all outliers in red.

3.4 Were surrogate recoveries of TCX and DCB outside the contract specification for any sample or blank (60-150%)? ✓ [ ] ___

YES NO N/A

ACTION: No qualification is done if surrogates are diluted out. If recovery for both surrogates is below the contract limit, but above 10%, flag all results for that sample "J". If recovery is < 10% for either surrogate, qualify positive results "J" and flag non-detects "R". If recovery is above the contract advisory limits for both surrogates qualify positive values "J".

3.5 Were surrogate retention times (RT) within the windows established during the initial 3-point analysis of Individual Standard Mixture A? [✓] ___ ___

ACTION: If the RT limits are not met, the analysis may be qualified "R" (unusable) for that sample on the basis of professional judgement.

3.6 Are there any transcription/calculation errors between the raw data and Form II? ___ [✓] ___

ACTION: If large errors exist, call lab for explanation/resubmittal. Make any necessary corrections and document effect in data assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery (Form III) present? [✓] ___ ___

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices? (1 MS/MSD must be performed for every 20 samples of similar matrix or concentration level.)

a. Low Water [ ] ___ ✓

b. Soil [✓] ___ ___

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

YES NO N/A

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soil
NA out of 12	0 out of 12

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soil
NA out of 6	0 out of 6

ACTION: No action is taken based on MS/MSD data alone. However, using informed professional judgement, the MS/msd results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? [✓] ___ ___

5.2 Frequency of Analysis: for the analysis of Pest./PCB compounds, has a reagent/method blank been analyzed for each SDG or every 20 samples of similar matrix or concentration or each batch extraction , whichever is more frequent? [✓] ___ ___

ACTION: If ny blank data are missing, take the action specified in 3.2 above. If blank data is not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

5.3 Has a pest./PCB instrument blank been analyzed at the beginning of ever 12 hr. period following the initial calibration sequence? (minimum contract requirement). [✓] ___ ___

YES NO N/A

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If missing deliverables are unavailable, document effect in data assessment.

5.4 Chromatography: review the blank raw data chromatograms (RICs), quant reports or data system printouts and spectra.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Pest./PCBs? [__] __ __

ACTION: Use professional judgement to determine the effect of the data.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

no   yes, but concentration EXTREMELY low

6.1 Do any method/instrument/reagent cleanup blanks have positive results for Pest./PCBs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture when necessary. ✓ [__] __

6.2 Do any field/trip/rinse blanks have positive Pest./PCB results? __ [✓] __

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, or calibration QC problems.

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

Sample Conc. > CRQL but < 5 x blank value	Sample Conc. < CRQL & < 5 x blank value	Sample Conc. > CRQL & > 5 x blank value
Flag sample result with a "U"	Report CRQL and qualify "U"	No qualification is needed

6.3 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and GC Performance

7.1 Are the following Gas Chromatograms and Data System Printouts for both columns present for all samples,, blanks, MS/MSD?

a. peak resolution check [✓] ___ ___

b. performance evaluation mixtures [✓] ___ ___

c. aroclor 1016/1260 [✓] ___ ___

d. aroclors 1221, 1232, 1242, 1248, 1254 [✓] ___ ___

e. toxaphene [✓] ___ ___

f. low points individual mixtures A & B [✓] ___ ___

g. med points individual mixtures A & B [✓] ___ ___

h. high points individual mixtures A & B [✓] ___ ___

i. instrument blanks [✓] ___ ___

	YES	NO	N/A
ACTION: If no, take action as specified in 3.2 above.			
7.2 Are Forms VI - PEST 1-4 present and complete for each column and each analytical sequence?	[✓]	___	___
ACTION: If no, take action as specified in 3.2 above.			
7.3 Are there any transcription/calculation errors between the raw data and Forms VI?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation/resubmittals, make necessary corrections and document effect in data assessment.			
7.4 Do all standard retention times, including each pesticide in each level of Individual Mixtures A & B, fall within the windows established during the initial calibration analytical sequence? (For Initial Calibration Standards, Form VI, PEST-1.)	[✓]	___	___
ACTION: If no, all samples in the entire analytical sequence are potentially affected. Check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results and non-detects as "R" (unusable). For aroclors, RT may be outside the RT window, but the aroclors may still be identified from the individual pattern.			
7.5 Are the linearity criteria for the initial analyses of Individual Standards A & B within limits for both columns? (%RSD must be < 20 for all analytes except for the 2 surrogates which must not exceed 30% RSD). See Form VI, PEST-2.	[ ]	✓	___

Aldun

YES NO N/A

ACTION: If no, qualify all associated positive results generated during the entire analytical sequence "J" and all non-detects "UJ". When RSD is >90, flag all non-detect results for that analyte "R" (unusable).

7.6 Is the resolution between any two adjacent peaks in the Resolution Check Mixture > 60% for both columns? (Form VI PEST-4). [✓] ___ ___

ACTION: If no, positive results for compounds that were not adequately resolved should be qualified "J". Use professional judgement to determine in non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or rejected "R" (unusable).

7.7 Is Form VII - PEST-1 present and complete for each Performance Evaluation Mixture analyzed during the analytical sequence for both columns? [✓] ___ ___

ACTION: If no, take action as specified in 3.2 above.

7.8 Has the individual % breakdown exceeded 20% on either column? ___ [✓] ___

- for 4,4'-DDT? ___ [✓] ___

- endrin? ___ [✓] ___

Has the combined % breakdown for 4,4'-DDT/Endrin exceeded 30% on either column? (required in all instances.) ___ [✓] ___

ACTION: 1. If any % breakdown has failed the QC criteria in either PEM in steps 2 and 17 in the initial calibration sequence (p. D-38/PEST SOW 3/90), qualify all sample analyses in the entire analytical sequence as described below.

YES NO N/A

2. If any % breakdown has failed the QC criteria in a PEM Verification calibration, review data beginning with the samples which followed the last <u>in-control</u> standard until the next acceptable PEM & qualify the data as described below.

a. 4,4'-DDT Breakdown: If 4,4'DDT breakdown is greater than 20%:

   i. Qualify all positive results for DDT with "J". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT and "R" (unusable).

   ii. Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity "NJ".

b. Endrin Breakdown: If endrin breakdown is greater than 20%:

   i. Qualify all positive results for endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for endrin as "R" (unusable).

   ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity "NJ".

c. Combined Breakdown: If the combined 4,4'-DDT and endrin breakdown is greater than 30%:

   i. Qualify all positive results for DDT and endrin with "J". If endrin was not detected, but endrin aldehyde and endrin ketone are positive, then qualify the quantitation limit for endrin as "R" (unusable(. If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT as "R" (unusable).

	YES	NO	N/A
ii. Qualify positive results for endrin ketone and endrin aldehyde as presumptively present at an approximated quantity "NJ". Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity "NJ".			
7.9 Are the relative percent difference (RPD) values for all PEM analytes < 25%? (Form VII PEST-1)	[✓]	___	___
ACTION: If no, qualify all associated positive results generated during the analytical sequence "J" and sample quantitation limits "UJ".			
NOTE: If the failing PEM is part of the initial calibration, all samples are potentially affected. If the offending standard is a verification calibration, the associated samples are those which followed the last in-control standard until the next passing standard.			
7.10 Have all samples been injected within a 12 hour period beginning with the injection of an Instrument Blank?	[✓]	___	___
ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify accordingly.			
7.11 Is Form VII - PEST-2 present and complete for each INDA and INDB Verification Calibration analyzed?	[✓]	___	___
7.12 Are there any transcription/calculation errors between raw data and Form VII - PEST-2?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessment, under "Conclusions".			

	YES	NO	N/A
7.13 Do all standard retention times for INDA and INDB Verification Calibration fall within the windows established by the Initial Calibration Sequence?	[✓]	___	___

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results and non-detects as "R" (unusable).

	YES	NO	N/A
7.14 Are RPD values for all verification calibration standard compounds < 25%?	[✓]	___	___

ACTION: If the RPD is < 25%, for the compound being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard containing the analyte which failed the criteria. If the RPD is > 90%, flag all non-detects for that analyte "R" (unusable).

8.0 Analytical Sequence Check (Form VIII-PEST)

	YES	NO	N/A
8.1 If Form VIII present and complete for each column and each period of analysis?	[✓]	___	___

ACTION: If no, take action specified in 3.2 above.

	YES	NO	N/A
8.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses (see CLP SOW p. D-39 & D-41/PEST)	[✓]	___	___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.

	YES	NO	N/A

9.0 Cleanup Efficiency Verification (Form IX)

9.1 Is Form IX - PEST-1 present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest./PCB extracts.) [✓] ___ ___

ACTION: If no, take action specified in 3.2 above. If data suggests that florisil cleanup was not performed, make note in "Contract Problems/Non-Compliance".

9.2 Are all samples listed on the Pesticide Florisil Cartridge Check Form? [✓] ___ ___

ACTION: If no, take action as specified in 3.2 above.

9.3 If GPC Cleanup was performed (mandatory for all soil sample extracts) is Form IX - PEST-2 present? [✓] ___ ___

ACTION: If no, take action as specified in 3.2 above.

ACTION: If GPC Cleanup was not performed when required, make note in "Contract Problems/Non-Compliance" section of data assessment.

9.4 Are percent recoveries (%R) of the pesticide and surrogate compounds used to check the efficiency of the cleanup procedures within QC limits:

80-120% for Florisil Cartridge Check? [✓] ___ ___

80-110% for GPC Calibration? [✓] ___ ___

Qualify only the analyte(s) which fail the recovery criteria as follows:

ACTION: If the %R is < 80, qualify positive results "J" and quantitation limits "UJ". Non-detects should be qualified "R" if zero %R was obtained for pesticide compounds. Use professional judgement to qualify positive results if recoveries are greater than the upper limit.

YES NO N/A

NOTE: Sample data should be evaluated for potential interferences if recovery of 2,4,5-trichlorophenol was > 5% in the Florisil Cartridge Performance Check analysis. Make note in "Contract Problems/Non-Compliance" section of the data assessment.

NOTE: The raw data of the GPC Calibration Check analysis is evaluated for pattern similarity with previously run Aroclor standards.

10.0 Pesticide/PCB Identification

10.1 If Form X complete for every sample in which pesticide and PCB was detected? [✓] ___ ___

ACTION: If no, take action specified in 3.2 above.

10.2 Are there any transcription/calculation errors between raw data and Forms 6E, 6G, 7E, 7D, 8D, 9A, 9B, and 10A? ___ [✓] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and note errors under "Conclusions".

10.3 Are retention times (RT) of sample compounds within the established RT windows for both analyses? [✓] ___ ___

Was GC/MS confirmation provided when compound concentration is > 10 ug/ml (or 10,000 ug/l) in the final extract? [ ] ___ ✓

ACTION: Use professional judgement to qualify positive results which were not confirmed by GC/MS. Qualify as "R" (unusable) all positive results not meeting RT window unless associated standard compounds are similarly biased (see Functional Guidelines). The reviewer should use professional judgement to assign an appropriate quantitation limit.

YES NO N/A

10.4 Is the percent difference (%D) calculated for the positive sample results on the two GC columns < 25%? [__] ✓ __

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

% Difference	Qualifier
25 - 50%	J
50 - 90%	JN
> 90%	R

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

10.5 Check chromatograms for false negatives, especially the multiple peak compounds toxaphene and PCBs. Were there any false negatives? __ [✓] __

ACTION: Use professional judgement to decide if the compound should be reported. If the appropriate PCB standards were not analyzed, qualify the data "R" (unusable).

11.0 Compound Quantitation and Reported Detection Limits

11.1 Are there any transcription/calculation errors in From I results? Check at least two positive values. Were any errors found? __ [✓] __

NOTE: Single-peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity "NJ". This necessitates a determination of an estimated concentration on the confirmation column. The assessment should indicate that the presence of interferences has conflicted with the evaluation of the second columns confirmation.

YES NO N/A

11.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, % moisture? [✓] __ __

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessment.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the reanalysis of the diluted sample. Specify which Form I is to be used, then draw a red :X: across the entire page of all Form I's that should not be used, including any in the summary package.

ACTION: Quantitation limits affected by large, off-scale peaks should be qualified as "R" (unusable). If the interference is on-scale, the reviewer can provide an approximated quantitation limit "UJ" for each affected compound.

12.0 Chromatogram Quality

12.1 Were baseline stable? [✓] __ __

12.2 Were any electropositive displacement (negative peaks) or unusual peaks seen? __ [✓] __

ACTION: Address comments under "System Performance" section of data assessment.

YES NO N/A

13.0 Field Duplicates

13.1 Were any field duplicates submitted for Pest./PCB analysis? [✓] __ __

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the data assessment. However, if large differences exist, identification of field duplicate samples should be confirmed by contacting the sampler.

BKD91 + 92 – no significant difference

INTERNATIONAL
TECHNOLOGY
CORPORATION

RECEIVED
AUG 20 1992
S & M BRANCH

August 19, 1992

USEPA Region II, ESD
2890 Woodbridge Avenue
Building 209
Edison, NJ 08837

SDG NARRATIVE

Case Number:	18460
Sample Delivery Group Number (SDG#):	BKD89
Laboratory Name:	ITAS-Knoxville (ITSTU)
Contract Number:	68D10094
ITAS Project Number:	EPAG 51826

Enclosures

Enclosed are the data for case number 18460. Table 1 lists EPA and ITAS sample numbers, SMO tag numbers, sample matrix, sample concentration, VOA pH values and analysis requested.

Sample Receipt

The samples were received in one (1) shipment on July 16, 1992. The shipment contained five (5) soil samples and two (2) water samples in good condition. The sample container for PEST/PCB sample BKD89 listed the sample ID as MBEF83. This was the ID of the corresponding inorganic sample. SMO was contacted and a copy of the correspondence is included.

SDG NARRATIVE (GC/MS)

CASE: 18460 SDG: BKD89
PROJECT CODE: EPAG 51826
METHOD:

The volatiles analyses were performed by purge and trap with a J & W DB-624 megabore column on a Finnigan Incos-500 GC/MS/DS. The sample analyses went well, however some apparent matrix effects were seen with respect to an internal standard. The area for the third internal standard, chlorobenzene-d5, was low for samples BKD89 and BKD90. Fivefold dilutions of these samples exhibited compliant internal standard areas. Also BKD93 was QC compliant but only marginally so for the third internal standard area; however, samples BKD93MS and BKD93MSD each had the third internal standard area slightly low. The MS and MSD were not reanalyzed as the original sample analysis was compliant.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan Incos-XL GC/MS/DS. The sample analyses went well, although some problems were encountered related to sample matrix. Dilutions were necessary in some cases, including medium level soils, due to high background contamination, usually hydrocarbons. The sample soil matrix was responsible for percent recoveries and RPD's outside advisory limits in both the low and medium level QC. These effects were seen in the surrogate recoveries of BKD93, BKD93MS, and BKD93MSD as all exhibited high recoveries of 2-fluorophenol. Also the rinsate, BKD95, and its associated blank SBLK4 yielded high recoveries of 2-fluorophenol. We have seen higher than expected recoveries of this parameter in the past using continuous liquid / liquid extraction compared to separatory funnel extractions.

There were no problems seen in final data review.

Data were reported with qualifiers as follows:

U Compound analyzed for but not detected; value given is quantification limit.
E Compound exceeded calibration range.
D Compound analyzed at secondary dilution.
J Compound detected but below quantification limit; value estimated.
B Compound found in method blank.
S Spiked compound.
A Suspected aldol product.
Y Indistinguishable isomer in tentatively identified compounds.
N Presumptive evidence of compound presence.

SDG NARRATIVE - CLP GC
ITAS-KNOXVILLE

Project Code: CASE 18460 SDG BKD89

Method: CLP SOW 3/90 OLM.01.0-6

The samples were analyzed for Pesticides/PCBs using a RTx-35 and DB-1701 0.53mm ID megabore capillary columns.
1.0 ul was injected for each column.

Analytical Difficulties:

Because of the difficult sample matrix, it was necessary to inject several Hexanes between sample injections to clean the system. This was discussed concernig a similar case with Mr. Hooper on 2/27/92. These Hexanes were only used to help clean the system and, therfore, were not entered into Formaster. These injections account for any gaps of time between the soil sample analysis. A phone dialogue is included.
Due to the Formaster program's inability to print a PEM calibration check, an instrument blank was analyzed beforehand to insure a clean operating system and to have an instrument blank to tie to the first PEM standard so that it would print this calibration check on Form VII. Therefore, section D-42/PEST of the SOW could not be followed. A phone dialogue is included.
In addition, matrix effects were believed due to samples containing hydrocarbon interference. As a result, the surrogate recoveries of the soil samples were below the advisory limits. Also, numerous peaks indicated the presence of Aroclor 1260 in BKD93. The same quantitation values could not be reproduced on a second column. As a result this sample was analyzed on SP2250/2401 and SPB-5 (0.53mm I.D.) columns. Upon this analysis, a highly altered Aroclor 1260 pattern was detected. To be contractually compliant, Aroclor 1260 is being reported as per OLM01.8, but it the judgement of this facility the presence of Aroclor 1260 is questionable.
Due to the complex nature of BKD93, the MSD had two spike compounds off-scale on the RTX-35 column, and thus, these pesticides were quantitated with acceptable results on the DB-1701 column. Along with BKD93, the rest of the soil sample chromatograms revealed Aroclor patterns that were very difficult to interpret due to a combination of pattern alterations and matrix interferences. A representative sample (BKD89) was also analyzed on a SP2250/2401 column to provide further information and to help us make the best interpretation.

All samples and the associated method blanks were treated to remove sulfur interferences.

SDG NARRATIVE continued
ITAS-KNOXVILLE

The following flags were used in reporting of data:

U - Compound analyzed for but not detected; value given is the quantitation limit.
D - Compound analyzed at a secondary dilution; DL was appended to the sample number.
X - A flag that FORMASTER III inserts when the data were entered manually.
Z - Compound's response was such that it exceeded the established linearity range. The value is estimated.
J - Compound detected but below the quantitation limit; value estimated.
S - Matrix spike.
D - Matrix spike duplicate.

Buddy Robinson

Buddy Robinson
GC/MS Supervisor

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above.

Release of the data contained in this hardcopy data package and in the computer readable data submitted on diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Alyce R. Moore

Alyce R. Moore
Laboratory Manager

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD89

Lab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1613

Sample wt/vol: 5.0 (g/mL) G Lab File ID: TT1613

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. 72 Date Analyzed: 07/26/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION (UG/KG)	Q
74-87-3	Chloromethane	36	U J
74-83-9	Bromomethane	36	U
75-01-4	Vinyl Chloride	36	U
75-00-3	Chloroethane	36	U
75-09-2	Methylene Chloride	36 ~~11~~	~~BJ~~ UJ
67-64-1	Acetone	62	J
75-15-0	Carbon Disulfide	36	U
75-35-4	1,1-Dichloroethene	36	U
75-34-3	1,1-Dichloroethane	36	U
540-59-0	1,2-Dichloroethene (total)	36	U
67-66-3	Chloroform	36	U
107-06-2	1,2-Dichloroethane	36	U
78-93-3	2-Butanone	36	U
71-55-6	1,1,1-Trichloroethane	36	U
56-23-5	Carbon Tetrachloride	36	U
75-27-4	Bromodichloromethane	36	U
78-87-5	1,2-Dichloropropane	36	U
10061-01-5	cis-1,3-Dichloropropene	36	U
79-01-6	Trichloroethene	4	J
124-48-1	Dibromochloromethane	36	U J
79-00-5	1,1,2-Trichloroethane	36	U
71-43-2	Benzene	36	U
10061-02-6	trans-1,3-Dichloropropene	36	U
75-25-2	Bromoform	36	U
108-10-1	4-Methyl-2-Pentanone	36	U
591-78-6	2-Hexanone	36	U
127-18-4	Tetrachloroethene	36	U
79-34-5	1,1,2,2-Tetrachloroethane	36	U
108-88-3	Toluene	36 ~~5~~	~~BJ~~ UJ
108-90-7	Chlorobenzene	36	U J
100-41-4	Ethylbenzene	36	U
100-42-5	Styrene	36	U
1330-20-7	Xylenes (total)	36	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD89

Lab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1613

Sample wt/vol: 5.0 (g/mL) G Lab File ID: TT1613

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. 72 Date Analyzed: 07/26/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNDECANE, DIMETHYL-	16.47	34	JY N
2.	OCTANE, DIMETHYL-	16.87	25	JY N

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD90

Lab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1614

Sample wt/vol: 5.0 (g/mL) G Lab File ID: TT1614

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. 58 Date Analyzed: 07/26/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	24	U J
74-83-9	Bromomethane	24	U
75-01-4	Vinyl Chloride	24	U
75-00-3	Chloroethane	24	U
75-09-2	Methylene Chloride	~~8~~ 24	~~BJ~~ UJ
67-64-1	Acetone	40	J
75-15-0	Carbon Disulfide	~~21~~ 24	~~J~~ UJ
75-35-4	1,1-Dichloroethene	24	U J
75-34-3	1,1-Dichloroethane	24	U
540-59-0	1,2-Dichloroethene (total)	24	U
67-66-3	Chloroform	24	U
107-06-2	1,2-Dichloroethane	24	U
78-93-3	2-Butanone	24	U
71-55-6	1,1,1-Trichloroethane	24	U
56-23-5	Carbon Tetrachloride	24	U
75-27-4	Bromodichloromethane	24	U
78-87-5	1,2-Dichloropropane	24	U
10061-01-5	cis-1,3-Dichloropropene	24	U
79-01-6	Trichloroethene	24	U
124-48-1	Dibromochloromethane	24	U
79-00-5	1,1,2-Trichloroethane	24	U
71-43-2	Benzene	24	U
10061-02-6	trans-1,3-Dichloropropene	24	U
75-25-2	Bromoform	24	U
108-10-1	4-Methyl-2-Pentanone	24	U
591-78-6	2-Hexanone	24	U
127-18-4	Tetrachloroethene	24	U
79-34-5	1,1,2,2-Tetrachloroethane	24	U
108-88-3	Toluene	32	B
108-90-7	Chlorobenzene	24	U
100-41-4	Ethylbenzene	24	U
100-42-5	Styrene	24	U
1330-20-7	Xylenes (total)	24	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD91

Lab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1615

Sample wt/vol: 1.0 (g/mL) G Lab File ID: TT1615R

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. 32 Date Analyzed: 07/26/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	74	U J
74-83-9	Bromomethane	74	U
75-01-4	Vinyl Chloride	74	U
75-00-3	Chloroethane	74	U
75-09-2	Methylene Chloride	74 ~~22~~	~~BJ~~ UJ
67-64-1	Acetone	97	J
75-15-0	Carbon Disulfide	74	U
75-35-4	1,1-Dichloroethene	74	U
75-34-3	1,1-Dichloroethane	74	U
540-59-0	1,2-Dichloroethene (total)	74	U
67-66-3	Chloroform	74	U
107-06-2	1,2-Dichloroethane	74	U
78-93-3	2-Butanone	34	J
71-55-6	1,1,1-Trichloroethane	74	U J
56-23-5	Carbon Tetrachloride	74	U
75-27-4	Bromodichloromethane	74	U
78-87-5	1,2-Dichloropropane	74	U
10061-01-5	cis-1,3-Dichloropropene	74	U
79-01-6	Trichloroethene	74	U
124-48-1	Dibromochloromethane	74	U
79-00-5	1,1,2-Trichloroethane	74	U
71-43-2	Benzene	74	U
10061-02-6	trans-1,3-Dichloropropene	74	U
75-25-2	Bromoform	74	U
108-10-1	4-Methyl-2-Pentanone	74	U
591-78-6	2-Hexanone	74	U
127-18-4	Tetrachloroethene	74	U
79-34-5	1,1,2,2-Tetrachloroethane	74	U
108-88-3	Toluene	74 ~~39~~	~~BJ~~ UJ
108-90-7	Chlorobenzene	74	U J
100-41-4	Ethylbenzene	74	U
100-42-5	Styrene	74	U
1330-20-7	Xylenes (total)	74	U

141

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD92

Lab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1616

Sample wt/vol: 1.0 (g/mL) G Lab File ID: TT1616

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. 41 Date Analyzed: 07/26/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	85	U J
74-83-9	Bromomethane	85	U
75-01-4	Vinyl Chloride	85	U
75-00-3	Chloroethane	85	U
75-09-2	Methylene Chloride	85 ~~25~~	~~BJ~~ UJ
67-64-1	Acetone	97	J
75-15-0	Carbon Disulfide	85 ~~54~~	~~J~~ UJ
75-35-4	1,1-Dichloroethene	85	U J
75-34-3	1,1-Dichloroethane	85	U
540-59-0	1,2-Dichloroethene (total)	85	U
67-66-3	Chloroform	85	U
107-06-2	1,2-Dichloroethane	85	U
78-93-3	2-Butanone	85	U
71-55-6	1,1,1-Trichloroethane	85	U
56-23-5	Carbon Tetrachloride	85	U
75-27-4	Bromodichloromethane	85	U
78-87-5	1,2-Dichloropropane	85	U
10061-01-5	cis-1,3-Dichloropropene	85	U
79-01-6	Trichloroethene	85	U
124-48-1	Dibromochloromethane	85	U
79-00-5	1,1,2-Trichloroethane	85	U
71-43-2	Benzene	85	U
10061-02-6	trans-1,3-Dichloropropene	85	U
75-25-2	Bromoform	85	U
108-10-1	4-Methyl-2-Pentanone	85	U
591-78-6	2-Hexanone	85	U
127-18-4	Tetrachloroethene	85	U
79-34-5	1,1,2,2-Tetrachloroethane	85	U
108-88-3	Toluene	1600	B
108-90-7	Chlorobenzene	85	U
100-41-4	Ethylbenzene	85	U
100-42-5	Styrene	85	U
1330-20-7	Xylenes (total)	28	J

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD92

Lab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1616

Sample wt/vol: 1.0 (g/mL) G Lab File ID: TT1616

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. 41 Date Analyzed: 07/26/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
Number TICs found: 10 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1002-43-3	UNDECANE, 3-METHYL-	14.77	24000	JN
2. 14720-74-2	HEPTANE, 2,2,4-TRIMETHYL-	15.10	10000	JN
3.	OCTANE, TRIMETHYL-	15.20	8400	JY N
4.	DODECANE, TRIMETHYL-	15.50	8900	JY N
5. 13475-82-6	HEPTANE, 2,2,4,6,6-PENTAMETH	16.17	25000	JN
6. 1070-87-7	PENTANE, 2,2,4,4,-TETRAMETHY	16.34	10000	JN
7. 62185-53-9	NONANE, 5-(2-METHYLPROPYL)-	16.47	32000	JN
8.	OCTANE, DIMETHYL-	16.90	26000	JY N
9. 62108-25-2	DECANE, 2,6,7-TRIMETHYL-	17.00	19000	JN
10. 17301-25-6	UNDECANE, DIMETHYL-	17.34	19000	JN

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD93

ab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

ab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

atrix: (soil/water) SOIL Lab Sample ID: TT1617

ample wt/vol: 5.0 (g/mL) G Lab File ID: TT1617

evel: (low/med) LOW Date Received: 07/16/92

Moisture: not dec. 5 Date Analyzed: 07/26/92

C Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

oil Extract Volume: ______ (uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U J
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11 ~~5~~	~~BJ~~ U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11 ~~3~~	~~BJ~~ U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylenes (total)	11	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD93

Lab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

Lab Code: ITSTU Case No.: 18460 SAS No.: SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1617

Sample wt/vol: 5.0 (g/mL) G Lab File ID: TT1617

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. 5 Date Analyzed: 07/26/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD95

Lab Name: ITAS-KNOXVILLE Contract: 68-D1-0094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1627

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: TT1627

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. ____ Date Analyzed: 07/25/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	4	J
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	BJ
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	31	
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylenes (total)	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD96 207

Lab Name: ITAS-KNOXVILLE Contract: ______

Lab Code: ______ Case No.: ______ SAS No.: ______ SDG No.: KD89

Matrix: (soil/water) WATER Lab Sample ID: TT1628

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: TT1628

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: not dec. ____ Date Analyzed: 07/25/92

GC Column: DB-624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	14	
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	11	B
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	3	J
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylenes (total)	10	U

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD89

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1620

Sample wt/vol: 30.1 (g/mL) G Lab File ID: TT1620

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: 72 decanted: (Y/N) N Date Extracted: 07/20/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/06/92

Injection Volume: 2.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	12000	UJ
111-44-4	bis(2-Chloroethyl)Ether	12000	U
95-57-8	2-Chlorophenol	12000	U
541-73-1	1,3-Dichlorobenzene	12000	U
106-46-7	1,4-Dichlorobenzene	12000	U
95-50-1	1,2-Dichlorobenzene	12000	U
95-48-7	2-Methylphenol	12000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	12000	U
106-44-5	4-Methylphenol	12000	U
621-64-7	N-Nitroso-Di-n-Propylamine	12000	U
67-72-1	Hexachloroethane	12000	U
98-95-3	Nitrobenzene	12000	U
78-59-1	Isophorone	12000	U
88-75-5	2-Nitrophenol	12000	U
105-67-9	2,4-Dimethylphenol	12000	U
111-91-1	bis(2-Chloroethoxy)Methane	12000	U
120-83-2	2,4-Dichlorophenol	12000	U
120-82-1	1,2,4-Trichlorobenzene	12000	U
91-20-3	Naphthalene	12000	U
106-47-8	4-Chloroaniline	12000	U
87-68-3	Hexachlorobutadiene	12000	U
59-50-7	4-Chloro-3-Methylphenol	12000	U
91-57-6	2-Methylnaphthalene	12000	U
77-47-4	Hexachlorocyclopentadiene	12000	U
88-06-2	2,4,6-Trichlorophenol	12000	U
95-95-4	2,4,5-Trichlorophenol	28000	U
91-58-7	2-Chloronaphthalene	12000	U
88-74-4	2-Nitroaniline	28000	U
131-11-3	Dimethylphthalate	12000	U
208-96-8	Acenaphthylene	12000	U
606-20-2	2,6-Dinitrotoluene	12000	U
99-09-2	3-Nitroaniline	28000	U
83-32-9	Acenaphthene	12000	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD89

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1620

Sample wt/vol: 30.1 (g/mL) G Lab File ID: TT1620

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: 72 decanted: (Y/N) N Date Extracted: 07/20/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/06/92

Injection Volume: 2.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	28000	U J
100-02-7	4-Nitrophenol	28000	U
132-64-9	Dibenzofuran	12000	U
121-14-2	2,4-Dinitrotoluene	12000	U
84-66-2	Diethylphthalate	12000	U
7005-72-3	4-Chlorophenyl-phenylether	12000	U
86-73-7	Fluorene	12000	U
100-01-6	4-Nitroaniline	28000	U
534-52-1	4,6-Dinitro-2-methylphenol	28000	U
86-30-6	N-Nitrosodiphenylamine (1)	12000	U
101-55-3	4-Bromophenyl-phenylether	12000	U
118-74-1	Hexachlorobenzene	12000	U
87-86-5	Pentachlorophenol	28000	U
85-01-8	Phenanthrene	12000	U
120-12-7	Anthracene	12000	U
86-74-8	Carbazole	12000	U
84-74-2	Di-n-Butylphthalate	12000	U
206-44-0	Fluoranthene	1900	J
129-00-0	Pyrene	1400	J
85-68-7	Butylbenzylphthalate	12000	U J
91-94-1	3,3'-Dichlorobenzidine	12000	U
56-55-3	Benzo(a)Anthracene	12000	U
218-01-9	Chrysene	1300	J
117-81-7	bis(2-Ethylhexyl)Phthalate	12000 ~~6100~~	~~BJ~~ UJ
117-84-0	Di-n-Octyl Phthalate	12000	U J
205-99-2	Benzo(b)Fluoranthene	1400	J
207-08-9	Benzo(k)Fluoranthene	12000	U J
50-32-8	Benzo(a)Pyrene	12000	U
193-39-5	Indeno(1,2,3-cd)Pyrene	12000	U
53-70-3	Dibenz(a,h)Anthracene	12000	U
191-24-2	Benzo(g,h,i)Perylene	12000	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD89

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1620

Sample wt/vol: 30.1 (g/mL) G Lab File ID: TT1620

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: 72 decanted: (Y/N) N Date Extracted: 07/20/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/06/92

Injection Volume: 2.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.0

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.83	7900	~~BJ~~ R
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.40	300000	~~BJNA~~ R
3.	UNKNOWN	18.63	3300	J
4.	UNKNOWN	30.92	2900	J
5.	UNKNOWN	31.45	4100	J
6.	UNKNOWN	31.85	3600	J
7.	UNKNOWN	32.05	4600	J
8.	UNKNOWN	32.12	6700	J

J.I.F. Contract:

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD90

ab Name: ITAS-KNOXVILLE Contract: 68D10094

b Code: ITSTU Case No.: 18460 SAS No.: ________ SDG No.: BKD89

atrix: (soil/water) SOIL Lab Sample ID: TT1621

mple wt/vol: 30.1 (g/mL) G Lab File ID: TT1621

vel: (low/med) LOW Date Received: 07/16/92

Moisture: 58 decanted: (Y/N) N Date Extracted: 07/20/92

ncentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/06/92

njection Volume: 2.0(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 6.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	19000	UJ
100-02-7	4-Nitrophenol	19000	U
132-64-9	Dibenzofuran	7800	U
121-14-2	2,4-Dinitrotoluene	7800	U
84-66-2	Diethylphthalate	7800	U
7005-72-3	4-Chlorophenyl-phenylether	7800	U
86-73-7	Fluorene	7800	U
100-01-6	4-Nitroaniline	19000	U
534-52-1	4,6-Dinitro-2-methylphenol	19000	U
86-30-6	N-Nitrosodiphenylamine (1)	7800	U
101-55-3	4-Bromophenyl-phenylether	7800	U
118-74-1	Hexachlorobenzene	7800	U
87-86-5	Pentachlorophenol	19000	U
85-01-8	Phenanthrene	7800	U
120-12-7	Anthracene	7800	U
86-74-8	Carbazole	7800	U
84-74-2	Di-n-Butylphthalate	7800	U
206-44-0	Fluoranthene	7800	U
129-00-0	Pyrene	7800	U
85-68-7	Butylbenzylphthalate	7800	U
91-94-1	3,3'-Dichlorobenzidine	7800	U
56-55-3	Benzo(a)Anthracene	7800	U
218-01-9	Chrysene	7800	U
117-81-7	bis(2-Ethylhexyl)Phthalate	7800	U
117-84-0	Di-n-Octyl Phthalate	7800	U
205-99-2	Benzo(b)Fluoranthene	7800	U
207-08-9	Benzo(k)Fluoranthene	7800	U
50-32-8	Benzo(a)Pyrene	7800	U
193-39-5	Indeno(1,2,3-cd)Pyrene	7800	U
53-70-3	Dibenz(a,h)Anthracene	7800	U
191-24-2	Benzo(g,h,i)Perylene	7800	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD91

ab Name: ITAS-KNOXVILLE   Contract: 68D10094

b Code: ITSTU   Case No.: 18460   SAS No.: ______   SDG No.: BKD89

atrix: (soil/water) SOIL   Lab Sample ID: TT1622

mple wt/vol: 1.0 (g/mL) G   Lab File ID: TT1622R2

evel: (low/med) MED   Date Received: 07/16/92

Moisture: 32   decanted: (Y/N) N   Date Extracted: 08/13/92

ncentrated Extract Volume: 500.0 (uL)   Date Analyzed: 08/14/92

njection Volume: 2.0(uL)   Dilution Factor: 10.0

C Cleanup: (Y/N) Y   pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	150000	U R
111-44-4	bis(2-Chloroethyl)Ether	150000	U
95-57-8	2-Chlorophenol	150000	U
541-73-1	1,3-Dichlorobenzene	150000	U
106-46-7	1,4-Dichlorobenzene	150000	U
95-50-1	1,2-Dichlorobenzene	150000	U
95-48-7	2-Methylphenol	150000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	150000	U
106-44-5	4-Methylphenol	150000	U
621-64-7	N-Nitroso-Di-n-Propylamine	150000	U
67-72-1	Hexachloroethane	150000	U
98-95-3	Nitrobenzene	150000	U
78-59-1	Isophorone	150000	U
88-75-5	2-Nitrophenol	150000	U
105-67-9	2,4-Dimethylphenol	150000	U
111-91-1	bis(2-Chloroethoxy)Methane	150000	U
120-83-2	2,4-Dichlorophenol	150000	U
120-82-1	1,2,4-Trichlorobenzene	150000	U
91-20-3	Naphthalene	150000	U
106-47-8	4-Chloroaniline	150000	U
87-68-3	Hexachlorobutadiene	150000	U
59-50-7	4-Chloro-3-Methylphenol	150000	U
91-57-6	2-Methylnaphthalene	150000	U
77-47-4	Hexachlorocyclopentadiene	150000	U
88-06-2	2,4,6-Trichlorophenol	150000	U
95-95-4	2,4,5-Trichlorophenol	370000	U
91-58-7	2-Chloronaphthalene	150000	U
88-74-4	2-Nitroaniline	370000	U
131-11-3	Dimethylphthalate	150000	U
208-96-8	Acenaphthylene	150000	U
606-20-2	2,6-Dinitrotoluene	150000	U
99-09-2	3-Nitroaniline	370000	U
83-32-9	Acenaphthene	150000	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD91

ab Name: ITAS-KNOXVILLE Contract: 68D10094

ab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

latrix: (soil/water) SOIL Lab Sample ID: TT1622

ample wt/vol: 1.0 (g/mL) G Lab File ID: TT1622R2

evel: (low/med) MED Date Received: 07/16/92

Moisture: 32 decanted: (Y/N) N Date Extracted: 08/13/92

oncentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/14/92

Injection Volume: 2.0(uL) Dilution Factor: 10.0

PC Cleanup: (Y/N) Y pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	370000	U R
100-02-7	4-Nitrophenol	370000	U
132-64-9	Dibenzofuran	150000	U
121-14-2	2,4-Dinitrotoluene	150000	U
84-66-2	Diethylphthalate	150000	U
7005-72-3	4-Chlorophenyl-phenylether	150000	U
86-73-7	Fluorene	150000	U
100-01-6	4-Nitroaniline	370000	U
534-52-1	4,6-Dinitro-2-methylphenol	370000	U
86-30-6	N-Nitrosodiphenylamine (1)	150000	U
101-55-3	4-Bromophenyl-phenylether	150000	U
118-74-1	Hexachlorobenzene	150000	U
87-86-5	Pentachlorophenol	370000	U
85-01-8	Phenanthrene	150000	U
120-12-7	Anthracene	150000	U
86-74-8	Carbazole	150000	U
84-74-2	Di-n-Butylphthalate	150000	U
206-44-0	Fluoranthene	150000	U
129-00-0	Pyrene	150000	U
85-68-7	Butylbenzylphthalate	150000	U
91-94-1	3,3'-Dichlorobenzidine	150000	U
56-55-3	Benzo(a)Anthracene	150000	U
218-01-9	Chrysene	150000	U
117-81-7	bis(2-Ethylhexyl)Phthalate	150000 ~~24000~~	~~J~~ U
117-84-0	Di-n-Octyl Phthalate	150000	U
205-99-2	Benzo(b)Fluoranthene	150000	U
207-08-9	Benzo(k)Fluoranthene	150000	U
50-32-8	Benzo(a)Pyrene	150000	U
193-39-5	Indeno(1,2,3-cd)Pyrene	150000	U
53-70-3	Dibenz(a,h)Anthracene	150000	U
191-24-2	Benzo(g,h,i)Perylene	150000	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD91

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1622

Sample wt/vol: 1.0 (g/mL) G Lab File ID: TT1622R2

Level: (low/med) MED Date Received: 07/16/92

% Moisture: 32 decanted: (Y/N) N Date Extracted: 08/13/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/14/92

Injection Volume: 2.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.0

Number TICs found: 17

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKANE	8.85	56000	J
2.	UNKNOWN ALKANE	9.05	66000	J
3.	UNKNOWN ALKANE	9.42	58000	J
4.	UNKNOWN ALKANE	9.57	46000	J
5.	UNKNOWN ALKANE	15.58	77000	J
6.	UNKNOWN ALKANE	16.78	44000	J
7.	UNKNOWN ALKANE	18.63	560000	J
8.	UNKNOWN	19.08	44000	J
9.	UNKNOWN ALKANE	19.17	46000	J
10.	UNKNOWN ALKANE	20.10	48000	J
11.	UNKNOWN ALKANE	20.72	63000	J
12.	UNKNOWN	22.43	130000	J
13.	UNKNOWN	25.33	49000	J
14.	UNKNOWN	30.50	40000	J
15.	UNKNOWN	31.52	93000	J
16.	UNKNOWN	31.90	30000	J
17.	UNKNOWN	32.18	120000	J

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD92

ab Name: ITAS-KNOXVILLE   Contract: 68D10094

b Code: ITSTU   Case No.: 18460   SAS No.: ______   SDG No.: BKD89

atrix: (soil/water) SOIL   Lab Sample ID: TT1623

mple wt/vol: 1.0 (g/mL) G   Lab File ID: TT1623R2

vel: (low/med) MED   Date Received: 07/16/92

Moisture: 41   decanted: (Y/N) N   Date Extracted: 07/30/92

ncentrated Extract Volume: 500.0 (uL)   Date Analyzed: 08/17/92

njection Volume: 2.0(uL)   Dilution Factor: 5.0

C Cleanup: (Y/N) Y   pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	210000	U J
100-02-7	4-Nitrophenol	210000	U
132-64-9	Dibenzofuran	85000	U
121-14-2	2,4-Dinitrotoluene	85000	U
84-66-2	Diethylphthalate	85000	U
7005-72-3	4-Chlorophenyl-phenylether	85000	U
86-73-7	Fluorene	85000	U
100-01-6	4-Nitroaniline	210000	U
534-52-1	4,6-Dinitro-2-methylphenol	210000	U
86-30-6	N-Nitrosodiphenylamine (1)	85000	U
101-55-3	4-Bromophenyl-phenylether	85000	U
118-74-1	Hexachlorobenzene	85000	U
87-86-5	Pentachlorophenol	210000	U
85-01-8	Phenanthrene	85000	U
120-12-7	Anthracene	85000	U
86-74-8	Carbazole	85000	U
84-74-2	Di-n-Butylphthalate	85000	U
206-44-0	Fluoranthene	85000	U
129-00-0	Pyrene	85000	U
85-68-7	Butylbenzylphthalate	85000	U
91-94-1	3,3'-Dichlorobenzidine	85000	U
56-55-3	Benzo(a)Anthracene	85000	U
218-01-9	Chrysene	85000	U
117-81-7	bis(2-Ethylhexyl)Phthalate	85000 ~~9400~~	~~J~~ UJ
117-84-0	Di-n-Octyl Phthalate	85000	U J
205-99-2	Benzo(b)Fluoranthene	85000	U
207-08-9	Benzo(k)Fluoranthene	85000	U
50-32-8	Benzo(a)Pyrene	85000	U
193-39-5	Indeno(1,2,3-cd)Pyrene	85000	U
53-70-3	Dibenz(a,h)Anthracene	85000	U
191-24-2	Benzo(g,h,i)Perylene	85000	U

(1) - Cannot be separated from Diphenylamine

1B
EPA SAMPLE NO.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BKD92

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1623

Sample wt/vol: 1.0 (g/mL) G Lab File ID: TT1623R2

Level: (low/med) MED Date Received: 07/16/92

% Moisture: 41 decanted: (Y/N) N Date Extracted: 07/30/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	85000	UJ
111-44-4	bis(2-Chloroethyl)Ether	85000	U
95-57-8	2-Chlorophenol	85000	U
541-73-1	1,3-Dichlorobenzene	85000	U
106-46-7	1,4-Dichlorobenzene	85000	U
95-50-1	1,2-Dichlorobenzene	85000	U
95-48-7	2-Methylphenol	85000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	85000	U
106-44-5	4-Methylphenol	85000	U
621-64-7	N-Nitroso-Di-n-Propylamine	85000	U
67-72-1	Hexachloroethane	85000	U
98-95-3	Nitrobenzene	85000	U
78-59-1	Isophorone	85000	U
88-75-5	2-Nitrophenol	85000	U
105-67-9	2,4-Dimethylphenol	85000	U
111-91-1	bis(2-Chloroethoxy)Methane	85000	U
120-83-2	2,4-Dichlorophenol	85000	U
120-82-1	1,2,4-Trichlorobenzene	85000	U
91-20-3	Naphthalene	85000	U
106-47-8	4-Chloroaniline	85000	U
87-68-3	Hexachlorobutadiene	85000	U
59-50-7	4-Chloro-3-Methylphenol	85000	U
91-57-6	2-Methylnaphthalene	85000	U
77-47-4	Hexachlorocyclopentadiene	85000	U
88-06-2	2,4,6-Trichlorophenol	85000	U
95-95-4	2,4,5-Trichlorophenol	210000	U
91-58-7	2-Chloronaphthalene	85000	U
88-74-4	2-Nitroaniline	210000	U
131-11-3	Dimethylphthalate	85000	U
208-96-8	Acenaphthylene	85000	U
606-20-2	2,6-Dinitrotoluene	85000	U
99-09-2	3-Nitroaniline	210000	U
83-32-9	Acenaphthene	85000	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD92

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1623

Sample wt/vol: 1.0 (g/mL) G Lab File ID: TT1623R2

Level: (low/med) MED Date Received: 07/16/92

% Moisture: 41 decanted: (Y/N) N Date Extracted: 07/30/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.1

Number TICs found: 17

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKANE	8.83	27000	J
2.	UNKNOWN ALKANE	9.40	29000	J
3.	UNKNOWN ALKANE	9.55	18000	J
4.	UNKNOWN ALKANE	15.58	42000	J
5.	UNKNOWN ALKANE	16.78	21000	J
6.	UNKNOWN ALKANE	16.93	20000	J
7.	UNKNOWN ALKANE	17.95	96000	J
8.	UNKNOWN ALKANE	18.62	230000	J
9.	UNKNOWN ALKANE	19.07	18000	J
10.	UNKNOWN ALKANE	19.17	21000	J
11.	UNKNOWN ALKANE	20.70	26000	J
12.	UNKNOWN	22.42	26000	J
13.	UNKNOWN	30.17	30000	J
14.	UNKNOWN	30.48	17000	J
15.	UNKNOWN	31.50	35000	J
16.	UNKNOWN	31.57	21000	J
17.	UNKNOWN	32.17	52000	J

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD93

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1624

Sample wt/vol: 30.2 (g/mL) G Lab File ID: TT1624R2

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: 5 decanted: (Y/N) N Date Extracted: 07/20/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: 6.2

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UG/KG	Q
51-28-5	2,4-Dinitrophenol	17000	UJ
100-02-7	4-Nitrophenol	17000	~~U~~R
132-64-9	Dibenzofuran	6900	U
121-14-2	2,4-Dinitrotoluene	6900	U
84-66-2	Diethylphthalate	6900	U
7005-72-3	4-Chlorophenyl-phenylether	6900	U
86-73-7	Fluorene	6900	U
100-01-6	4-Nitroaniline	17000	U
534-52-1	4,6-Dinitro-2-methylphenol	17000	U
86-30-6	N-Nitrosodiphenylamine (1)	6900	U
101-55-3	4-Bromophenyl-phenylether	6900	U
118-74-1	Hexachlorobenzene	6900	U
87-86-5	Pentachlorophenol	17000	U
85-01-8	Phenanthrene	6900	U
120-12-7	Anthracene	6900	U
86-74-8	Carbazole	6900	U
84-74-2	Di-n-Butylphthalate	6900	U
206-44-0	Fluoranthene	6900	U
129-00-0	Pyrene	6900	U
85-68-7	Butylbenzylphthalate	6900	U
91-94-1	3,3'-Dichlorobenzidine	6900	U
56-55-3	Benzo(a)Anthracene	6900	U
218-01-9	Chrysene	6900	U
117-81-7	bis(2-Ethylhexyl)Phthalate	6900	U
117-84-0	Di-n-Octyl Phthalate	6900	U
205-99-2	Benzo(b)Fluoranthene	6900	U
207-08-9	Benzo(k)Fluoranthene	6900	U
50-32-8	Benzo(a)Pyrene	6900	U
193-39-5	Indeno(1,2,3-cd)Pyrene	6900	U
53-70-3	Dibenz(a,h)Anthracene	6900	U
191-24-2	Benzo(g,h,i)Perylene	6900	U

(1) - Cannot be separated from Diphenylamine

538

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD93

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1624

Sample wt/vol: 30.2 (g/mL) G Lab File ID: TT1624R2

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: 5 decanted: (Y/N) N Date Extracted: 07/20/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: 6.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	6900	U
111-44-4	bis(2-Chloroethyl)Ether	6900	U
95-57-8	2-Chlorophenol	6900	U
541-73-1	1,3-Dichlorobenzene	6900	U
106-46-7	1,4-Dichlorobenzene	6900	U
95-50-1	1,2-Dichlorobenzene	6900	U
95-48-7	2-Methylphenol	6900	U
108-60-1	2,2'-oxybis(1-Chloropropane)	6900	UJ
106-44-5	4-Methylphenol	6900	U
621-64-7	N-Nitroso-Di-n-Propylamine	6900	U
67-72-1	Hexachloroethane	6900	U
98-95-3	Nitrobenzene	6900	U
78-59-1	Isophorone	6900	U
88-75-5	2-Nitrophenol	6900	U
105-67-9	2,4-Dimethylphenol	6900	U
111-91-1	bis(2-Chloroethoxy)Methane	6900	U
120-83-2	2,4-Dichlorophenol	6900	U
120-82-1	1,2,4-Trichlorobenzene	6900	U
91-20-3	Naphthalene	6900	U
106-47-8	4-Chloroaniline	6900	U
87-68-3	Hexachlorobutadiene	6900	U
59-50-7	4-Chloro-3-Methylphenol	6900	U
91-57-6	2-Methylnaphthalene	6900	U
77-47-4	Hexachlorocyclopentadiene	6900	U
88-06-2	2,4,6-Trichlorophenol	6900	U
95-95-4	2,4,5-Trichlorophenol	17000	U
91-58-7	2-Chloronaphthalene	6900	U
88-74-4	2-Nitroaniline	17000	UJ
131-11-3	Dimethylphthalate	6900	U
208-96-8	Acenaphthylene	6900	U
606-20-2	2,6-Dinitrotoluene	6900	U
99-09-2	3-Nitroaniline	17000	U
83-32-9	Acenaphthene	6900	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD93

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1624

Sample wt/vol: 30.2 (g/mL) G Lab File ID: TT1624R2

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: 5 decanted: (Y/N) N Date Extracted: 07/20/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 08/17/92

Injection Volume: 2.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) Y pH: 6.2

Number TICs found: 16

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.80	3400	~~BJ~~ R
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.35	110000	~~BJNA~~ R
3.	UNKNOWN	25.55	1800	J
4.	UNKNOWN	27.65	1800	J
5.	UNKNOWN	29.35	2200	J
6.	UNKNOWN	29.80	2300	J
7.	UNKNOWN	29.97	2900	J
8.	UNKNOWN	30.57	4100	J
9.	UNKNOWN	31.00	4300	J
10.	UNKNOWN	31.30	2100	J
11.	UNKNOWN	31.42	2500	J
12.	UNKNOWN	31.62	4000	J
13.	UNKNOWN	31.95	2800	J
14.	UNKNOWN	32.13	3400	J
15.	UNKNOWN	32.23	4900	J
16.	UNKNOWN	32.67	2800	J

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD95

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1629

Sample wt/vol: 1000 (g/mL) ML Lab File ID: TT1629R

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 08/11/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/12/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U R
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10 ~~20~~	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

Pw 8/19/92

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD95

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1629

Sample wt/vol: 1000 (g/mL) ML Lab File ID: TT1629R

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 08/11/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/12/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U R
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

515

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD95

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1629

Sample wt/vol: 1000 (g/mL) ML Lab File ID: TT1629R

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: ______ decanted: (Y/N) ___ Date Extracted: 08/11/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/12/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.32	5	BJNA
2.	UNKNOWN	5.63	4	BJ
3.	UNKNOWN	6.88	2	J
4.	UNKNOWN	32.10	2	J

EPA SAMPLE NO.

BKD96

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1630

Sample wt/vol: 1000 (g/mL) ML Lab File ID: TT1630

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 07/21/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/06/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION (UG/L)	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD96

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1630

Sample wt/vol: 1000 (g/mL) ML Lab File ID: TT1630

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: ______ decanted: (Y/N) ___ Date Extracted: 07/21/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/06/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION	Q
51-28-5	2,4-Dinitrophenol	25	UJ
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10 ~~20~~	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	2	J
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

PAS 8/19/92

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BKD96

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1630

Sample wt/vol: 1000 (g/mL) ML Lab File ID: TT1630

Level: (low/med) LOW Date Received: 07/16/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 07/21/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/06/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	5.35	4	JNA
2.	UNKNOWN	5.67	2	BJ
3.	UNKNOWN ALKANE	22.65	4	J
4.	UNKNOWN ALKANE	25.57	4	J
5.	UNKNOWN ALKANE	26.42	4	J
6.	UNKNOWN ALKANE	27.25	5	J
7.	UNKNOWN ALKANE	28.05	3	J
8.	UNKNOWN	28.90	86	BJ
9.	UNKNOWN ALKANE	29.63	3	J

985

EPA SAMPLE NO.

BKD89

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1620

Sample wt/vol: 30.2 (g/mL) G Lab File ID: ______

% Moisture: 72 decanted: (Y/N) N Date Received: 07/16/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 07/20/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 08/15/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	6.0	U J
319-85-7	beta-BHC	6.0	U
319-86-8	delta-BHC	6.0	U
58-89-9	Lindane	6.0	U
76-44-8	Heptachlor	6.0	U
309-00-2	Aldrin	6.0	U
1024-57-3	Heptachlor epoxide	6.0	U
959-98-8	Endosulfan I	6.0	U
60-57-1	Dieldrin	12	U
72-55-9	4,4'-DDE	12	U
72-20-8	Endrin	12	U
33213-65-9	Endosulfan II	12	U
72-54-8	4,4'-DDD	12	~~P~~ R
1031-07-8	Endosulfan sulfate	12	U J
50-29-3	4,4'-DDT	12	U
72-43-5	Methoxychlor	60	U
53494-70-5	Endrin ketone	12	U
7421-93-4	Endrin aldehyde	28	P JN
5103-71-9	alpha-Chlordane	6.0	U J
5103-74-2	gamma-Chlordane	6.0	U
8001-35-2	Toxaphene	600	U
12674-11-2	Aroclor-1016	120	U
11104-28-2	Aroclor-1221	240	U
11141-16-5	Aroclor-1232	120	U
53469-21-9	Aroclor-1242	130	P JN
12672-29-6	Aroclor-1248	120	U J
11097-69-1	Aroclor-1254	180	P J
11096-82-5	Aroclor-1260	100	~~JP~~ R

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD90

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1621

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

% Moisture: 58 decanted: (Y/N) N Date Received: 07/16/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 07/20/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 08/15/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.8 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.0	U J
319-85-7	beta-BHC	4.0	U
319-86-8	delta-BHC	4.0	U
58-89-9	Lindane	4.0	U
76-44-8	Heptachlor	4.0	U
309-00-2	Aldrin	4.0	U
1024-57-3	Heptachlor epoxide	4.0	U
959-98-8	Endosulfan I	4.0	U
60-57-1	Dieldrin	7.9	U
72-55-9	4,4'-DDE	7.9	U
72-20-8	Endrin	7.9	U
33213-65-9	Endosulfan II	7.9	U
72-54-8	4,4'-DDD	7.9	U
1031-07-8	Endosulfan sulfate	7.9	U
50-29-3	4,4'-DDT	7.9	U
72-43-5	Methoxychlor	40	U
53494-70-5	Endrin ketone	7.9	U
7421-93-4	Endrin aldehyde	14	
5103-71-9	alpha-Chlordane	4.0	U
5103-74-2	gamma-Chlordane	4.0	U
8001-35-2	Toxaphene	400	U
12674-11-2	Aroclor-1016	79	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	79	U
53469-21-9	Aroclor-1242	79	U
12672-29-6	Aroclor-1248	79	U
11097-69-1	Aroclor-1254	89	P
11096-82-5	Aroclor-1260	80	P R

FORM I PEST 3/90

1D
EPA SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

BKD91

Lab Name: ITAS-KNOXVILLE   Contract: 68D10094

Lab Code: ITSTU   Case No.: 18460   SAS No.: ______   SDG No.: BKD89

Matrix: (soil/water) SOIL   Lab Sample ID: TT1622

Sample wt/vol: 30.1 (g/mL) G   Lab File ID: ______

% Moisture: 32   decanted: (Y/N) N   Date Received: 07/16/92

Extraction: (SepF/Cont/Sonc) SONC   Date Extracted: 07/20/92

Concentrated Extract Volume: 5000 (uL)   Date Analyzed: 08/15/92

Injection Volume: 1.00 (uL)   Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y   pH: 7.0   Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.5	U J
319-85-7	beta-BHC	2.5	U
319-86-8	delta-BHC	2.5	U
58-89-9	Lindane	2.5	U
76-44-8	Heptachlor	2.5	U
309-00-2	Aldrin	2.5	U
1024-57-3	Heptachlor epoxide	2.5	U
959-98-8	Endosulfan I	2.5	U
60-57-1	Dieldrin	4.8	U
72-55-9	4,4'-DDE	4.8	U
72-20-8	Endrin	4.8	U
33213-65-9	Endosulfan II	4.8	U
72-54-8	4,4'-DDD	4.8	U
1031-07-8	Endosulfan sulfate	4.8	U
50-29-3	4,4'-DDT	4.8	U
72-43-5	Methoxychlor	25	U
53494-70-5	Endrin ketone	4.8	U
7421-93-4	Endrin aldehyde	4.8	U
5103-71-9	alpha-Chlordane	2.5	U
5103-74-2	gamma-Chlordane	2.5	U
8001-35-2	Toxaphene	250	U
12674-11-2	Aroclor-1016	48	U
11104-28-2	Aroclor-1221	98	U
11141-16-5	Aroclor-1232	48	U
53469-21-9	Aroclor-1242	23	JP
12672-29-6	Aroclor-1248	48	U J
11097-69-1	Aroclor-1254	51	P
11096-82-5	Aroclor-1260	45	~~JP~~ R

EPA SAMPLE NO.

BKD92

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1623

Sample wt/vol: 30.1 (g/mL) G Lab File ID: ______

% Moisture: 41 decanted: (Y/N) N Date Received: 07/16/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 07/20/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 08/16/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) Y

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION	Q
319-84-6	alpha-BHC	2.9	U J
319-85-7	beta-BHC	2.9	U
319-86-8	delta-BHC	2.9	U
58-89-9	Lindane	2.9	U
76-44-8	Heptachlor	2.9	U
309-00-2	Aldrin	2.9	U
1024-57-3	Heptachlor epoxide	2.9	U
959-98-8	Endosulfan I	2.9	U
60-57-1	Dieldrin	5.6	U
72-55-9	4,4'-DDE	5.6	U
72-20-8	Endrin	5.6	U
33213-65-9	Endosulfan II	5.6	U
72-54-8	4,4'-DDD	5.6	U
1031-07-8	Endosulfan sulfate	5.6	U
50-29-3	4,4'-DDT	5.6	U
72-43-5	Methoxychlor	29	U
53494-70-5	Endrin ketone	5.6	U
7421-93-4	Endrin aldehyde	5.5	~~JP~~ R
5103-71-9	alpha-Chlordane	2.9	U J
5103-74-2	gamma-Chlordane	2.9	U
8001-35-2	Toxaphene	290	U
12674-11-2	Aroclor-1016	56	U
11104-28-2	Aroclor-1221	110	U
11141-16-5	Aroclor-1232	56	U
53469-21-9	Aroclor-1242	31	JPN
12672-29-6	Aroclor-1248	56	U J
11097-69-1	Aroclor-1254	72	P JN
11096-82-5	Aroclor-1260	58	~~P~~ R

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD93

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) SOIL Lab Sample ID: TT1624

Sample wt/vol: 30.0 (g/mL) G Lab File ID: ______

% Moisture: 5 decanted: (Y/N) N Date Received: 07/16/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 07/20/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 08/15/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.2 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.8	U
319-85-7	beta-BHC	1.8	U
319-86-8	delta-BHC	1.8	U
58-89-9	Lindane	2.0	~~P~~R
76-44-8	Heptachlor	1.8	U
309-00-2	Aldrin	1.8	UJ
1024-57-3	Heptachlor epoxide	1.8	U
959-98-8	Endosulfan I	1.8	U
60-57-1	Dieldrin	3.5	U
72-55-9	4,4'-DDE	3.5	U
72-20-8	Endrin	4.4	~~P~~R
33213-65-9	Endosulfan II	3.5	U
72-54-8	4,4'-DDD	3.5	U
1031-07-8	Endosulfan sulfate	3.5	U
50-29-3	4,4'-DDT	5.0	~~P~~R
72-43-5	Methoxychlor	17	~~JP~~R
53494-70-5	Endrin ketone	3.5	U
7421-93-4	Endrin aldehyde	3.5	~~P~~R
5103-71-9	alpha-Chlordane	2.2	~~P~~R
5103-74-2	gamma-Chlordane	2.7	~~P~~R
8001-35-2	Toxaphene	180	U
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	71	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	92	~~P~~R

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD95

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1629

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ______

% Moisture: ______ decanted: (Y/N) ___ Date Received: 07/16/92

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 07/21/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 07/27/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 6.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	Lindane	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BKD96

Lab Name: ITAS-KNOXVILLE Contract: 68D10094

Lab Code: ITSTU Case No.: 18460 SAS No.: ______ SDG No.: BKD89

Matrix: (soil/water) WATER Lab Sample ID: TT1630

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ______

% Moisture: ______ decanted: (Y/N) ___ Date Received: 07/16/92

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 07/21/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 07/27/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 6.0 Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	Lindane	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

QUALITY ASSURED
EPA-MMB FINAL
CONTRACT LABORATORY DATA

SITE NAME: Murray Hill Parkway

CASE NO./SAS NO.: 18460

TYPE OF ANALYSIS (circle one):

VOA only
Full TCL
Full TAL
Full TAL and CN
SAS/Other

Sent to: Charles LoBue
Halliburton NUS

From: Valerie Smith
Malcolm Pirnie, Inc. - CNJ

Date Sent: 11/25/92

C:\WP51\MACROS\QAFINAL

RECORD OF COMMUNICATION	☐ PHONE CALL ☐ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE ☐ OTHER (SPECIFY) (Record of item checked above)	
TO: GEORGE KARRAS EPA/MMB	FROM: RSCC/ESAT	DATE 8/26/92 TIME

SUBJECT

CLP Inorganic Data Packages for Quality Assurance Review

SUMMARY OF COMMUNICATION

Attached are the following CLP Inorganic/SAS Data Packages to be reviewed for Quality Assurance.

SITE	CASE/SAS NO.	LABORATORY	MATRIX	NO. of SAMPLES
MURRAY HILL PKWY	18460	DATAC	SOIL	5
			WATER	2

APER/SSI

CONCLUSIONS, ACTION TAKEN OR REQUIRED

RECEIVED
NOV 10 1992

INFORMATION COPIES

EPA Form 1300-6 (7-72) REPLACES EPA HQ FORM 5300-3 WHICH MAY BE USED UNTIL SUPPLY IS EXHAUSTED.

Case #: 18460 **Site: Murray Hill Parkway**

SDG #s: MBDW99 **Lab: DATACHEM Laboratories Inc. (DATAC)** **Matrix:**

Soil 5
Water 2
Other 0

Contractor: Malcolm Pirnie (APER) **Reviewer: Dorothy M. Ponte**

A.2.1 Validation Flags- **The following flags have been applied in red by the data validator and must be considered by the data user.**

J- **This flag indicates the result qualified as estimated**

Red- Line- **A red-line drawn through a sample result indicates an unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.**

Fully Usable Data- **The results that do not carry "J" or "red-line" are fully usable.**

Contractual Qualifiers- **The legend of contractual qualifiers applied by the laboratory on Form I's is found on page B-20 of SOW ILM01.0.**

A.2.2 The data assessment is given below and on the attached sheets.

On July 15, 1992, Halliburtan NUS Environmental Corporation sampling personnel collected five (5) soil/sediment samples and two (2) rinsate samples for total metals and total cyanide analyses from the Murray Hill Parkway Site (aka U.S. Printing Inc.), East Rutherford, New Jersey. This includes one (1) soil field duplicate sample. Environmental samples were shipped to DATACHEM Laboratories, Inc. (DATAC) on July 15, 1992 (@ 15:00 hours) within twenty-four (24) hours of collection. Samples arrived intact at DATAC on July 16, 1992 (@ 10:00 hours) and were verified by the laboratory to have been properly preserved during shipment and storage.

A.2.2 (continuation)

1. The following analytes were either rejected "red-lined" or qualified as estimated "J" due to CRDL Standard percent recovery (%R) outside Quality Control (QC) limits, and because their concentrations fell within "affected ranges":

ANALYTE	% RECOVERY	VALIDATION	ASSOCIATED SAMPLES
Beryllium (Be)	$CRI_{I\&F}$ %R between 121-150%	"J"	MBER47 [1]
Iron (Fe)	$CRI_{I\&F}$ %R between 121-150%	"J"	MBFN41 and MBHQ94 [1]
Silver (Ag)	$CRI_{I\&F}$ %R between 121-150%	"J"	MBEF83 [1]
Copper (Cu)	CRI_{I} %R between 50-79%	"J"	MBFN41
Copper (Cu)	CRI_{F} %R > 150%	Red-lined	MBHQ94 [1]

[1] Positive values only were either qualified as estimated "J" or rejected "red-lined" in these samples.

Note: Due to professional judgement, antimony (Sb) in associated soil/sediment samples MBER47 and MBDW99, and aluminum (Al) in associated aqueous sample MBFN41 were not qualified as estimated "J" because the percent recovery of the initial found CRDL standard (CRI_{I} %R) is just outside (within .5%) of the Quality Control (QC) limits (80-120%).

2. Antimony (Sb), mercury (Hg), selenium (Se), and thallium (Tl) were qualified as estimated "J" in soil/sediment samples MBHK74, MBHH03, MBDW99, MBER47 and MBEF83 due to spike recoveries (%R) between 10-74% in the associated soil matrix spike (MBHK74S) and because the sample concentration (SR) is < 4 X the spike added concentration (SA).

3. Mercury (Hg) was qualified as estimated "J" in soil/sediment samples MBHK74, MBHH03, MBDW99, MBER47 and MBEF83 because the absolute difference between sample (S) MBHK74 and laboratory duplicate sample (D) MBHK74D is > 2 X CRDL when S and/or D is < 5 X CRDL.

   Note: Hg was previously qualified as estimated "J" in soil/sediment samples MBHK74, MBHH03, MBDW99, MBER47 and MBEF83 due to QC criteria as specified in statement No. 2.

4. Non-detected values of silver (Ag) were rejected "red-lined" in aqueous samples MBFN41 and MBHQ94 because the associated aqueous laboratory control sample (LCS) percent recovery is < 50%.

A.2.2 (continuation)

5. Chromium (Cr) and copper (Cu) were qualified as estimated "J" in samples MBHH03 and MBDW99 because the absolute difference between the sample (S) MBHH03 and the associated soil field duplicate sample (FD) MBDW99 is > the control limit (2 X CRDL) when (S) and/or (FD) is < 5 X CRDL.

6. Sodium (Na) in sample MBEF83; Cu in samples MBDW99, MBEF83, MBER47, and MBHH03; and zinc (Zn) in samples MBDW99, MBEF83, MBER47, MBHH03, and MBHK74 were qualified as estimated "J" because their concentrations are positive values > 10 X IDL (or ≥ CRDL when 10 X IDL ≤ CRDL) and because the percent difference (%D) calculated between sample MBHK74 and soil serial dilution sample MBHK74L is between 10-100% for these analytes. In addition, their concentrations in the initial sample result are > 10 X IDL.

   Note: Cu was previously qualified as estimated "J" in samples MBDW99 and MBHH03 due to soil field duplicate QC criteria as specified in statement No. 5.

7. The following furnace data analytes were qualified as estimated "J" because the analytical spike recovery (%R) is outside Quality Control (QC) limits (85-115%):

Analyte	% Recovery of Analytical Spike	Associated Samples
Thallium (Tl)	Between 10-84%	MBDW99, MBEF83, MBER47, MBHH03, and MBHK74
Selenium (Se)	Between 10-84%	MBDW99, MBEF83, MBER47, and MBHK74

   Note: Tl and Se were previously qualified as estimated "J" in the above samples due to soil spike recovery QC criteria as specified in statement No. 2.

8. Twenty-four (24) analytes were qualified as estimated "J" in sample MBEF83 because the percent solids of this sample is between 10-50%.

   Note: Eight (8) analytes (Sb, Cu, Hg, Se, Ag, Na, Tl, and Zn) were previously qualified as estimated "J" for QC criteria specified in statement Nos. 1, 2, 3, 6, and 7.

HS 11/10/92

A.2.3 Contact Problems/Non-Compliance

1. The Contract Laboratory qualified the $CCB_{2 \text{ and } 3}$ of Be (Form 3, page 23) with a "B" qualifier when this analyte was detected below the Instrument Detection Limit (IDL). (Refer to pages 126 and 134 of the data package).

   Note: The laboratory verified that the IDL of Be is 1.0 ug/L and that the analyte was incorrectly qualified with a "B" due to a software problem.

2. The Contract Laboratory qualified the CCB_1 of Vanadium (Page 24) with a "B" qualifier when this analyte was detected below the IDL. (Refer to page 145 of the data package).

3. The CL reported a star qualifier for Pb on Form 6 (sample MBHK74D), page 35 of the data package, and on the associated Form 1 soil data, when the RPD between the sample (S) and laboratory duplicate (D) is < 20% when S and D are > 5 X CRDL.

   Note: The laboratory verified that Pb should not have a star qualifier.

MMB/ESAT Reviewer: ______________________ Date: ______________
Signature

Contractor Reviewer: Dorothy Marian Pinto Date: September 22, 1992
Signature

Verified by: ______________________ Date: ______________
Signature

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: Total Date: September 1, 1992 Case #: 18461

Site: Murray Hill Parkway Lab Name: DATACHEM Laboratories, Inc. (DATAC)

Reviewer's Initials: D.P. Number of Samples: 7 (5 soil/sediment + 2 aqueous)

Analytes Rejected Due to Exceeding Review Criteria:*

	Hold. Times	Cali-bration	Prep Blank	Field Blank	Inter-ferences	Spike Recov.	Duplicates Lab	Duplicates Field	Detect. Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP		1								2			126	3
Flame AA													X	0
Furnace AA													28	0
Mercury													7	0
Cyanide													7	0
Total		1								2			168	3

Analytes Flagged as Estimated (J) Due to Exceeding Review Criteria:*

	Hold. Times	Cali-bration	Prep Blank	Dup. Inject.	Inter-ferences	Spike Recov.	Duplicates Lab	Duplicates Field	% Solid Content	LCS	Serial Dilution	MSA	Total Analytes	Estima-tion
ICP		5				10		4	13*		8*		126	40*
Flame AA													X	0
Furnace AA				*		5			2*				28	7*
Mercury						5	*		*				7	5*
Cyanide									1				7	1
Total		5		*		20	*	4	16*		8*		168	53*

Note: Asterisk (*) Indicates additional exceedances of review criteria.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Date: Jan. 1992
Number: HW-2
Revision: 11

Inorganic Analysis

INORGANIC REGIONAL DATA ASSESSMENT SUMMARY Region 2

Case#: 18460 SDG #s: MBDW99 Laboratory: DATACHEM Laboratories, Inc. (DATAC)

Site: Murray Hill Parkway No. Samples/ Matrix: 7 (5 soil/sediment + 2 aqueous)

Reviewer (If not ESD): Malcolm Pirnie, Inc. (APER) Reviewer's Name: Dorothy M. Ponte

SOW#: 3/90 Completion Date: September 22, 1992

DPO: Action: ____ FYI: ____

DATA ASSESSMENT SUMMARY

	ICP	AA	MERCURY	CYANIDE
1. HOLDING TIMES	0	0	0	0
2. INITIAL CALIBRATIONS	0	0	0	0
3. CONTINUING CALIBRATION	X	0	0	0
4. FIELD BLANKS ("N/A" = not applicable)	0	0	0	0
5. LABORATORY BLANKS	0	0	0	0
6. ICS	0			
7. LCS	X	0		
8. DUPLICATE ANALYSIS	X	0	M	0
9. MATRIX SPIKE	M	M	M	0
10. MSA	0			
11. SERIAL DILUTION	M			
12. SAMPLE PERCENT SOLIDS CONTENT	M*	M*	M*	M*
13. OTHER QC (DUPLICATE INJECTION)	N/A	M	N/A	N/A
14. OVERALL ASSESSMENT	M	M	M	0

* = Data qualified due to a non-laboratory related parameter.
O = No problems or minor problems that do not affect data usability.
X = No more than *about 5%* of the data points are qualified as either estimated or unusable.
M = More than *about 5%* of the data points are qualified as estimated.
Z = More than *about 5%* of the data points are qualified as unusable.

DPO Action items: ____

Areas of concern: ____

Evaluation of Metals for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: Hanif Sheikh DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: Kevin W. Kubik DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: Robert Runyon DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

		YES	NO	N/A
A.1.1	Contract Compliance Screening Report (CCS) - Present?	[ ]	✓	__
	ACTION: If no, contact RSCC.			
A.1.2	Record of Communication (from RSCC) - Present?	[✓]	__	__
	ACTION: If no, request from RSCC.			
A.1.3	Trip Report - Present and complete?	[✓]	__	__
	ACTION: If no, contact RSCC for trip report.			
A.1.4	Sample Traffic Report - Present?	[✓]	__	__
	Legible?	[✓]	__	__
	ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5	Cover Page - Present?	[✓]	__	__
	Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	__	__
	Action: If no, prepare Telephone Record Log, and contact laboratory.			
	Do numbers of samples correspond to numbers on Record of Communication?	[✓]	__	__
	Do sample numbers on cover page agree with sample numbers on:			
	(a) Traffic Report Sheet?	[✓]	__	__
	(b) Form I's?	[✓]	__	__
	ACTION: If no for any of the above, contact RSCC for clarification.			

	YES	NO	N/A

A.1.8 Holding Times - (aqueous and soil samples)

(Examine sample traffic reports and digestion/distillation logs.)

	YES	NO	N/A
Mercury analysis (28 days)............exceeded?	___	[✓]	___
Cyanide distillation (14 days).........exceeded?	___	[✓]	___
Other Metals analysis (6 months)......exceeded?	___	[✓]	___

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

A.1.8.2 Is pH of aqueous samples for:

	YES	NO	N/A
Metals Analysis > pH 2?	___	[✓]	___
Cyanides Analysis < pH 12?	___	[✓]	___

ACTION: If yes, flag the associated metals and cyanides data as estimated (J).

A.1.9 Form I (Final Data)

	YES	NO	N/A
A.1.9.1 Are all Form I's present and complete?	[✓]	___	___

ACTION: If no, prepare telephone record log and contact laboratory for resubmittal.

	YES	NO	N/A
A.1.9.2 Are correct units (ug/l for water and mg/kg for soils) indicated on Form I's?	[✓]	___	___
Are soil sample results for each parameter corrected for percent solids?	[✓]	___	___
Are all "less than IDL" values properly coded with "U"?	[✓]	___	___

		YES	NO	N/A
9/21/92	Are the correct concentration qualifiers used with final data?	[ ]	✓	
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.	Form 6 - laboratory duplicate star qualifier for lead		
A.1.9.3	Are EPA sample numbers and corresponding laboratory sample ID numbers the same as on the Cover Page, Form I's, and in the raw data?	[✓]		
	Was a brief physical description of samples given on Form I's?	[✓]		
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	✓	[ ]	
	ACTION: If no for any of the above, note under Contract Problem/Non-Compliance of the "Data Assessment Narrative".			
A.1.10	**Calibration**			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]		
	Is record of 5 point calibration present for Hg analysis?	[✓]		
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		✓
	Furnace AA?	[✓]		
	Cyanides?	[✓]		
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analysis?	[✓]		
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	__	[√]	__
	Cyanide Analysis?	__	[√]	__
	Atomic Absorption Analysis?	__	[√]	__

ACTION: If yes, flag the associated data as estimated (J).

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

		YES	NO	N/A
A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ± 10% of the true values?	[ ]	__	√

ACTION: If no, flag the associated data as estimated if standards are not within ± 10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and continuing Calibration Verification)

		YES	NO	N/A
A.1.11.1	Present and complete for every metal and cyanide?	[√]	__	__
	Present and complete for AA and ICP when both are used for the same analyte?	[ ]	__	√

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form II A all percent recoveries that are outside the contract windows.

Are all calibration standards (initial and continuing) within control limits:

	YES	NO	N/A
Metals - 90-110% R?	[√]	__	__
Hg - 80-120% R?	[√]	__	__
Cyanides - 85-115% R?	[√]	__	__

YES NO N/A

ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results < IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84%; Hg, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.

		YES	NO	N/A
A.1.11.3	Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___
	Was ICV for cyanides distilled?	[✓]	___	___

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.12 Form II B (CRDL Standards for AA and ICP)

		YES	NO	N/A
A.1.12.1	Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]	___	___
	Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis?	[✓]	___	___
	Was a 2 X CRDL (or 2 X IDL when IDL > CRDL) (CRI) analyzed for each ICP run?	[✓]	___	___

(Note: CRI for Al, Ba, Ca, Fe, Mb, Na, or K is not required.)

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges.

The affected ranges are:
AA Analysis - "True value ± CRDL
ICP Analysis - "Ture Value ± 2 X CRDL
CN Analysis - "True Value ± 0.5 X True Value.

"True value of CRA, CRI, or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[√]	___	___

<u>ACTION</u>: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

A.1.12.3 Circle on each Form II B all the percent recoveries that are outside of acceptance windows.

	YES	NO	N/A
Are CRA and CRI standards within control limits:			
Metals 80-120% R?	[__]	√	___
Is mid-range standard within control limits:			
Cyanide 80-120% R?	[√]	___	___

<u>ACTION</u>: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

<u>NOTE</u>: Flag or reject the final results only when sample <u>raw data</u> are within the affected ranges and the CRDL standards are outside acceptance windows.

A.1.13 <u>Form III (Initial and Continuing Calibration Blanks)</u>

		YES	NO	N/A
A.1.13.1	Present and complete?	[√]	___	___
	For both AA and ICP when both are used for the same analyte?	[__]	___	√
	Was an initial calibration blank analyzed?	[√]	___	___
	Was a continuing claibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[√]	___	___

YES NO N/A

ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".

A.1.13.2 Circle on each Form III all calibration blank values that are above CRDL (or 2 X IDL when IDL > CRDL).

Are all calibration blanks (when IDL < CRDL) $\leq$ the Contract Required Detection Limits (CRDLs)? [✓] __ __

Are all calibration blanks less than two times Instrument Detection Limit (when IDL > CRDL)? [__] __ ✓

ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is $\leq$ calibration blank value analyzed between calibation blank with value over CRDL (or 2 X IDL) and nearest good calibration blank.

Flag five samples on either side of the calibration blank outside the control limits.

A.1.14 Form III (Preparation Blank)

(Note: The preparation blank for mercury is the same as the calibration blank.)

A.1.14.1 Was on preparation blank analyzed for:

each Sample Delivery Group (SDG)? [✓] __ __

each batch of digested samples? [✓] __ __

each matrix type? [✓] __ __

both AA and ICP when both are used for the same analyte? [__] __ ✓

ACTION: If no for any of the above, flag as estimated (J) all associated positive data < 10 X IDLs for which a preparation blank was not analyzed.

NOTE: If only one blank was analyed for more than 20 samples, then the first 20 samples analyzed do have to be flagged as estimated (J).

		YES	NO	N/A
A.1.14.2	Is concentration of preparation blank value > the CRDL when IDL is ≤ the CRDL?	___	[√]	___
	Is yes, is the concentration of the sample with the least concentrated analyte < 10 X the preparation blank?	___	[___]	√
	ACTION: If yes, reject (red-line) all associated data > CRDL concentration but < 10 X the preparation blank value.			
A.1.14.3	Is concentration of the preparation blank value (Form III) < 2 X IDL, when IDL is > CRDL?	[___]	___	√
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are < 10 X the preparation blank value.			
A.1.14.4	Is the concentration of the preparation blank below the negative CRDL?	___	[√]	___
	ACTION: If yes, reject (red-line) all associated sample results < 10 X CRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[√]	___	___
	(Note: Not required for furnace AA, flame AA, mercury, cyanide, and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[√]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which Al, Ca, Fe, or Mg is higher than in the ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[√]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	√

	YES	NO	N/A

ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positve results only (not flagged with a "U").

A.1.16 Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)

(Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)

A.1.16.1 Present and complete for:

	YES	NO	N/A
each SDG?	[√]	___	___
each matrix type?	[√]	___	___
each concentration range (i.e. low, medium, high)?	[√]	___	___
For both AA and ICP when both are used for the same analyte?	[__]	___	√

ACTION: If no for any of the above, flag as estimated (J) all the positive data < 4 X the spiking levels specified in SOW for which spiked sample was not analyzed.

NOTE: If one spiked sample was analyted for more than 20 samples, then the first 20 samples analyzed do not have to be flagged as estimated (J).

A.1.16.2 Was a field blank used for the spiked sample? √ [ ] ___

JP 9/21/92

ACTION: If yes, flag all positive data < 4 X the spike added as estimated (J) for which a field blank was used as the spiked sample. unless the field blank is the only aqueou sample.

A.1.16.3 Circle on each Form V A all spike recoveries that are outside control limits (75-125%).

	YES	NO	N/A
Are all recoveries within control limits?	[__]	√	___
If no, is sample concentration ≥ to 4 X the spike concentration?	[__]	√	___

ACTION: If yes, disregard spike recoveries for analytes whose concentrations are $\geq$ 4 X the spike added. If no, circle those analytes on Form V for which sample concentrations is < 4 X the spike concentration.

Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form V A? [√] __ __

ACTION: If no, write in the Contract Problem/ Non-Compliance section of the "Data Assessment Narrative".

A.1.16.4 Aqueous

Are any spike recoveries:

(a) less than 30%? __ [√] __

(b) between 30-74%? __ [√] __

(c) between 126-150%? __ [√] __

(d) greater than 150%? __ [√] __

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%? __ [√] __

(b) between 10-74%? √ [__] __

(c) between 126-200%? __ [√] __

(d) greater than 200%? __ [√] __

YES NO N/A

ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".

A.1.17 Form VI (Lab Duplicates)

		YES	NO	N/A
A.1.17.1 Present and complete for:	each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[__]	___	✓

ACTION: If no for any of the above, flag as estimated (J) all the data $\geq$ CRDL* for which a duplicate sample was not analyzed.

Note: 1. If one duplicate sample was analyzed for more than 20 samples, then the first 20 samples do not have to be flagged as estimated.

2. If percent solids for the soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on a wet weight basis and calculate RPD or Difference for each analyte.

	YES	NO	N/A
A.1.17.2 Was a field blank used for duplicate analysis?	✓	[__]	___

DP 9/21/92

ACTION: If yes, flag all data $\geq$ CRDL* as estimated (J) for which a field blank was used as a duplicate. unless field blanks are the only aqueous samples.

	YES	NO	N/A
A.1.17.3 Are all values within control limits (RPD 20% or difference $\leq \pm$ CRDL)?	[__]	✓	___
If no, are all results outside the control limits flagged with an * on Form I's and VI?	[✓]	___	___

ACTION: If no, write in the Contract Problems/Non-Compliance section of the "Data Assessment Narrative".

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE:

1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than the IDL.

2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

		YES	NO	N/A
Is any RPD (where sample and duplicate are both ≥ 5 X *CRDL):	> 50%?	__	[✓]	__
Is any difference** between sample and duplicate (where sample and/or duplicate is < 5 X CRDL):	> *CRDL?	__	[✓]	__

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or
Difference > 2 X CRDL*

		YES	NO	N/A
Is any RPD (where sample and duplicate are both ≥ 5 X *CRDL):	> 100%?	__	[✓]	__
Is any **difference between sample and duplicate (where sample and/or duplicate is < 5 X *CRDL):	> 2 X *CRDL?	✓	[__]	__

* Substitute IDL for CRDL when IDL > CRDL.

** Use absolute values of sample and duplicate to calculate the difference.

YES NO N/A

ACTION: If yes, flag the assocaited data as estimated.

A.1.18 Field Duplicates

Were field duplicates analyzed? [√] __ __

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/L on a wet weight basis and calculate RPDs or Difference for each analyte.

NOTE:
1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or

Difference > CRDL*

Is any RPD (where sample and duplicate are both ≥ 5 X *CRDL):

> 50%? __ [__] √

Is any **difference between sample and duplicate (where sample and/or duplicate is < 5 X *CRDL):

> *CRDL? __ [__] √

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

YES NO N/A

A.1.18.3 Soil/Sediment

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 100%, or

Difference > 2 X CRDL*

Is any RPD (where sample and duplicate are both > 5 X *CRDL):

	YES	NO	N/A
> 100%?	__	[√]	__

Is any **difference between sample and duplicate (where sample and/or duplicate is < 5 X *CRDL):

	YES	NO	N/A
> 2 X *CRDL?	√	[__]	__

ACTION: If yes, flag the associated data as estimated.

A.1.19 Form VII (Laboratory Control Sample)
(Note: LCS is not required for aqueous Hg and cyanide analyses.)

A.1.19.1 Was one LCS prepared and analyzed for:

	YES	NO	N/A
each SDG?	[√]	__	__
each batch of samples digested/distilled?	[√]	__	__
both AA and ICP when both are used for the same analyte?	[__]	__	√

ACTION: If no for any of the above, prepare a Telephone Record Log and contact the laboratory for submittal of resutls of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then the first 20 samples close to the LCS do not have to be flagged as estimated (J).

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

YES NO N/A

Aqueous LCS

Circle on each Form VII the LCS percent recoveries outside control limits (80-120%) except for aqueous Ag and Sb.

Is any LCS recovery:

DP 9/21/92

	YES	NO	N/A
less than 50%?	✓	[✓]	__
between 50% and 79%?	✓	[✓]	__
between 121% and 150%?	__	[✓]	__
greater than 150%?	__	[✓]	__

ACTION: If < 50%, reject (red-line) all data; between 50-79%, flag all associated data as estimated (J); between 121-150%, flag all positive (not flagged with a "U") results as estimated; > 150%, reject all positive results.

A.1.19.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).

2. If IDL of an analyte is ≥ the "True" value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII? __ [✓] __

ACTION: If yes, qualify all associated positive data as estimated (J).

Is LCS "Found" value lower than the control limits on Form VII? __ [✓] __

ACTION: If yes, qualify all associated positive data as estimated (J).

	YES	NO	N/A

A.1.20 Form IX (ICP Serial Dilution)

NOTE: Serial dilution analysis is required only for initial concentrations ≥ 10 X IDL.

A.1.20.1 Was a Serial Dilution analysis performed for:

	YES	NO	N/A
each SDG?	[√]	__	__
each matrix type?	[√]	__	__
each concentration range (i.e. low, med.)?	[√]	__	__

ACTION: If no for any of the above, flag as estimated (J) all the positive data ≥ 10 X IDL (or ≥ CRDL when 10 X IDL ≤ CRDL) for which a Serial Dilution Analysis was not performed.

A.1.20.2 Was field blank(s) used for Serial Dilution Analysis? √ [__] __

DP 9/22/92

ACTION: If yes, flag all associated data ≥ 10 X IDL as estimated (J). If 10 X IDL is ≤ CRDL, flag all data ≥ CRDL as estimated (J). unless field blanks are only aqueous samples.

A.1.20.3 Are results outside control limits flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is ≥ 50 X IDL? [√] __ __

ACTION: If not, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.20.4 Circle on each Form IX all percent differences that are outside the control limits for initial concentrations ≥ 10 X IDLs only.

Are any percent difference values:

	YES	NO	N/A
> 10%?	√	[__]	__
≥ 100%?	__	[√]	__

YES NO N/A

ACTION: Flag as estimated (J) all the associated sample data ≥ 10 X IDL (or ≥ CRDL when 10 X IDL ≤ CRDL) for which percent difference is > 10% but < 100%. Reject (red-line) all the associated sample results ≥ 10 X IDL (or ≥ CRDL when 10 X IDL ≤ CRDL) for which percent difference is ≥ 100%.

Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10 X IDL (or ≥ CRDL when 10 X IDL ≤ CRDL).

A.1.21 Furnace Atomic Absorbtion (AA) QC Analysis

A.1.21.1 Are duplicate injections present in furnace raw data (except during full Method of Standard Addition (MSA)) for each sample analyzed by GFAA? [√] __ __

ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.

A.1.21.2 Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration > CRDL? [√] __ __

Was a dilution analyzed for sample with analytical spike recovery < 40%? [√] __ __

ACTION: If no for any of the above, flag all the associated data as estimated (J).

A.1.21.3 Is *analytical spike recovery outside the control limits (85-115%) for any sample? √ [__] __

ACTION: If yes, flag as estimated (J) the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject (red-line) the associated sample results if the recovery is < 10%; reject positive sample results if the recovery is > 200%.

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag as estimated the data only when the affected sample(s) was not subsequently analyzed by the Method of Standard Addition (MSA).			
A.1.22	Form VIII (Method of Standard Addition Results)			
A.1.22.1	Present?	[√]	__	__
	If no, is any Form I result coded with "S" or a "+"?	__	[__]	√
	ACTION: If yes, write request on Telephone Record Log and contact the laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA < 0.990 for any sample?	__	[__]	√
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	__	[√]	__
	Is coefficient of correlation for MSA < 0.995?	__	[__]	√
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	__	[__]	√
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[√]	__	__
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and preparation blank.

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s)?	___	[✓]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___

NOTE:
1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is > CRDL as well as total concentration.
2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.
3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.

		YES	NO	N/A
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte > its total concentration by more than 10%?	___	[__]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte > its total concentration by more than 50%?	___	[__]	✓

ACTION: If > 10%, flag both dissolved (or inorganic) and total values as estimated (J); if > 50%, reject (red-line) the data for both values.

		YES	NO	N/A
A.1.24	Form I (Field Blank)			
A.1.24.1	Circle all field blank values on Form I that are > CRDL, (or 2 X IDL when IDL > CRDL).			
	Is field blank concentration < CRDL (or 2 X IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[✓]	___	___

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[__]	__	√

ACTION: If no, reject (except field blank results) all associated positive sample data less than 5 times the field blank value. Reject on Form I's the soil sample results (converted to ug/L on a wet weight basis) ≤ 5 X the field blank value in ug/L.

A.1.25 Form X, XI, XII (Verification of Instrumental Parameters)

A.1.25.1 Is verification report present for:

	YES	NO	N/A
Instrument Detection Limits (quarterly)?	[√]	__	__
ICP interelement Correction Factors (annually)?	[√]	__	__
ICP Linear Ranges (quarterly)?	[√]	__	__

ACTION: If no, contact TPO of the laboratory.

A.1.25.2 Form X (Instrument Detection Limits)
(Note: IDL is not required for Cyanide.)

	YES	NO	N/A
A.1.25.2.1 Are IDLs present for: all the analytes?	[√]	__	__
all the instrumenst used?	[√]	__	__
For both AA and ICP when both are used for the same analyte?	[__]	__	√

ACTION: If no for any of the above, prepare Telephone Record Log and contact the laboratory.

	YES	NO	N/A
A.1.25.2.2 Is IDL greater than CRDL for any analyte?	__	[√]	__
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, > 5 X IDL?	[__]	__	√

	YES	NO	N/A
ACTION: If no, flag as estimated (J) all values < 5 X IDL of the instrument whose IDL exceed CRDL.			
A.1.25.3 Form XI (Linear Ranges)			
A.1.25.3.1 Was any sample result higher than the high linear range of ICP?	__	[✓]	__
Was any sample result higher than the highest calibration standard for non-ICP parameters?	✓	[ ]	__
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[✓]	__	__
ACTION: If no, flag the result reported on Form I as estimated (J).			
A.1.26 Percent Solids of Sediments			
A.1.26.1 Are percent solids in sediments(s):			
< 50%?	✓	[ ]	__
< 10%?	__	[✓]	__

ACTION: If yes, qualify as estimated (J) all the results of a sample that has a percent solids between 10-50% (i.e. moisture content between 50-90%). Reject (red-line) all the results of a sample that has a percent solids < 10% (i.e. moisture content > 90%).

NOTE: Reject (red-line) or flag as estimated (J) only the sample results that were not previously rejected or flagged due to other QC criteria.

In Reference to Case No(s):
18460

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 9/21/92

Laboratory Name: DataChem Laboratories, Inc.
Lab Contact: Ken R. Olson - Manager (801) 266-7700

Region: U.S. EPA Region II
Regional Contact: Dorothy M. Ponte

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):

ICP aqueous data.

Summary of Questions/Issues Discussed:

1) ICP aqueous data (excluding copper) requires a factor of approximately 1.1115 to obtain values for data reported on Form Is, Form III PBW data, Form V (sample MBFN41S), Form VI (sample MBFN41D) and Form VII LCSW of the data package. Why?
2) Verify IDL of beryllium, as values detected at approximately 0.97ug/L are qualified with a 'B' qualifier.
3) Form VI (sample MB1tK74D) page 35 of the data package reports a star qualifier for lead. The RPD is < 20% when S and D are > 5x CRDL (3 ug/L).

Summary of Resolution:
Blaine D. Tidwell - Document Control Officer responded 9/21/92 @ ~13:45 hours
1) Microwave water sample preparation initial volume (45 mL) to final volume (50 mL) and digestion procedure cause factor to be approximately 1.11. Refer to SOW.
2) A software problem caused the analyte to be incorrectly reported with a 'B' qualifier (due to rounding up). The IDL for Be is 1.0 ug/L.
3) Lead should not have a star qualifier.

Signature: Dorothy Marian Ponte   Date: 9/21/92

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

DATA CHEM
LABORATORIES
A SORENSON COMPANY

RECEIVED
AUG 25 1992
S & M BRANCH

August 24, 1992

USEPA REGION II, ESD
2890 Woodbridge Avenue
Building 209
Edison, NJ 08837

Attn: Richard Spear

Dear Mr. Spear:

Enclosed you will find all the ORIGINAL documentation for Inorganic Case No. 18460, SDG No. MBDW99.

Please keep in mind that they are the original documents. **If they are lost, we cannot produce the originals, we can only produce photocopies.**

Please acknowledge receipt of the enclosure by dating, signing and returning this letter. A pre-addressed, stamped envelope has been provided for your convenience.

Should you have any questions concerning the enclosed data package, please feel free to contact Mr. Ken R. Olson or me at (801) 266-7700. We would welcome any suggestions which you believe would help us to serve you better.

Sincerely,

Blaine D. Tidwell

Blaine D. Tidwell
Document Control Officer

Enclosure

Date: 8/25/92

Acknowledged by: Carrie R. Ross

SALT LAKE CITY OFFICE
960 WEST LeVOY DRIVE
SALT LAKE CITY, UTAH 84123-2547
801 266-7700, FAX 801 268-9992

CINCINNATI OFFICE
4388 GLENDALE-MILFORD ROAD
CINCINNATI, OHIO 45242-3706
513 733-5336, FAX 513 733-5347

BALTIMORE OFFICE
10 JULIET LANE, SUITE #203
BALTIMORE, MARYLAND 21236-1220
410 494-3612 FAX 513 733-5347

RICHLAND OFFICE
313 WELLSIAN WAY
RICHLAND, WASHINGTON 99352-4116
509 943-5858 FAX 509 943-5654

RECEIVED

AUG 25 1992

S & M BRANCH

Please read this Case Narrative before screening this case

SDG: MBDW99 Case: 18460

All values in this deliverable are calculated by the computer software. Variations from form to form in the last significant digit by + or - 1, are caused by the computer software. This occurs most often in forms 1, 5a, 5b, 6, 8 and 9.

The times on form 14 do not reflect seconds, thus the software rounds the times to the nearest minute. This sometimes causes the time between CCV and CCB to exceed the time between the last sample and CCV, but the data is contractually compliant.

This batch of samples was prepared using both microwave and hotplate digestion procedures for GFAA and ICP analyses. The methods codes F and P are used as defaults. However, if all samples for a specific analyte were digested using microwave digestion procedures, a method code of PM or FM is put in for that analyte. Water samples for both GFAA and ICP as well as soil samples for GFAA were digested using microwave digestion, while soils for ICP were digested using conventional hotplate methods. Therefore, a method code of P is used for all samples analyzed by ICP eventhough some of the samples were prepared by microwave digestion.

This SDG included two Rinsates Blanks. They were the only samples of the water matrix. DataChem Laboratories was therefore not required to perform Matrix Duplicates nor Matrix Spikes for water for this SDG.

The ICV for copper for run 72 was found to be outside of control limits with a recovery of 117.8%. Therefore, no samples were "X"'d for copper for this run. All subsequent ICV's, ICB's, ICS's, CCV's, CCB's, and CRI's for copper are labeled to correct this fact. However, due to software limitations, Form 14 cannot be corrected to show two different labels for the same sample i.e., ICV2 for copper is the same as ICV3 for all other analytes run on ICP. The following list is a compilation of changes that won't be reflected on Form 14: ICV3 and 4 are ICV2 and 3; ICB3 and 4 are ICB2 and 3; CCV8, 9, 10, 11, and 12 are CCV5, 6, 7, 8, and 9; ICSAI3 and 4 are ICSAI2 and 3; ICSABI3 and 4 are ICSABI2 and 3; ICSAF3 and 4 are ICSAF2 and 3; ICSABF3 and 4 are ICSABF2 and 3; CRII3 and 4 are CRII2 and 3; CRIF3 and 4 are CRIF2 and 3. All these corrections are for copper only, all other analytes are correct as shown.

ENVIROFORMS/INORGANIC CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: DATACHEM LABORATORIES   Contract: 68-D0-0149

Lab Code: DATAC   Case No.: 18460   SAS No.:   SDG No.: MBDW99

SOW No.: 3/90

Sample No.	Lab Sample ID.
MBDW99	CLP10521
MBEF83	CLP10522
MBER47	CLP10523
MBFN41	CLP10524
MBFN41D	CLP10524
MBFN41S	CLP10524
MBHH03	CLP10525
MBHK74	CLP10526
MBHK74D	CLP10526
MBHK74S	CLP10526
MBHQ94	CLP10527
MBHQ94D	CLP10527
MBHQ94S	CLP10527

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES
If yes, were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. 2

Signature: ____________   Name: Michael P. Deesley

Date: August 24, 1992   Title: Section Manager

0F
9/03/92

Field duplicate of sample MEHH02

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MBDW99

Lab Name: DATACHEM LABORATORIES   Contract: 68-D0-0149

Lab Code: DATAC   Case No.: 18460   SAS No.:   SDG No.: MBDW99

Matrix (soil/water): SOIL   Lab Sample ID: CLP10521

Level (low/med): LOW   Date Received: 07/16/92

% Solids: 77.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2760			P
7440-36-0	Antimony	9.8	U	N J	P
7440-38-2	Arsenic	1.4			FM
7440-39-3	Barium	36.5	B		P
7440-41-7	Beryllium	0.26	U		P
7440-43-9	Cadmium	0.77	U		P
7440-70-2	Calcium	1530			P
7440-47-3	Chromium	16.8		J	P
7440-48-4	Cobalt	2.2	B		P
7440-50-8	Copper	56.6		J	P
7439-89-6	Iron	6170			P
7439-92-1	Lead	72.7			FM
7439-95-4	Magnesium	1400			P
7439-96-5	Manganese	51.6			P
7439-97-6	Mercury	0.21		N*J	CV
7440-02-0	Nickel	4.6	U		P
7440-09-7	Potassium	197	B		P
7782-49-2	Selenium	0.24	B	NW J	FM
7440-22-4	Silver	0.77	U		P
7440-23-5	Sodium	506	B	E	P
7440-28-0	Thallium	0.23	B	NW J	FM
7440-62-2	Vanadium	16.1			P
7440-66-6	Zinc	55.4		E J	P
	Cyanide	7.5			AS

Color Before: BROWN   Clarity Before: Texture: MEDIUM

Color After: COLORLESS   Clarity After: Artifacts:

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

DP 9/15/92

ENVIROFORMS/INORGANIC CLP

SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

MBEF83

Lab Name: DATACHEM LABORATORIES   Contract: 68-D0-0149

Lab Code: DATAC   Case No.: 18460   SAS No.:   SDG No.: MBDW99

Matrix (soil/water): SOIL   Lab Sample ID: CLP10522

Level (low/med): LOW   Date Received: 07/16/92

% Solids: 24.3 < 50% solids

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9680		J	P
7440-36-0	Antimony	31.3	U	N J	P
7440-38-2	Arsenic	10.8			FM
7440-39-3	Barium	118	B		P
7440-41-7	Beryllium	0.82	U		P
7440-43-9	Cadmium	11.2			P
7440-70-2	Calcium	5660			P
7440-47-3	Chromium	422			P
7440-48-4	Cobalt	11.7	B	J	P
7440-50-8	Copper	156		J	P
7439-89-6	Iron	22800		J	P
7439-92-1	Lead	163		J	FM
7439-95-4	Magnesium	5140		J	P
7439-96-5	Manganese	335		J	P
7439-97-6	Mercury	21.7		N* J	CV
7440-02-0	Nickel	66.5		J	P
7440-09-7	Potassium	1900	B	J	P
7782-49-2	Selenium	0.98	B	NW J	FM
7440-22-4	Silver	3.8	B	J	P
7440-23-5	Sodium	7500		E J	P
7440-28-0	Thallium	0.41	U	NW J	FM
7440-62-2	Vanadium	42.7		J	P
7440-66-6	Zinc	561		E J	P
	Cyanide	10.3	U	J	AS

Hg 5 x D/F

Color Before: BROWN   Clarity Before: Texture: MEDIUM

Color After: COLORLESS   Clarity After: Artifacts:

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MBER47

Lab Name: DATACHEM LABORATORIES Contract: 68-D0-0149

Lab Code: DATAC Case No.: 18460 SAS No.: SDG No.: MBDW99

Matrix (soil/water): SOIL Lab Sample ID: CLP10523

Level (low/med): LOW Date Received: 07/16/92

% Solids: 71.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5740		J	P
7440-36-0	Antimony	10.7	U	NJ	P
7440-38-2	Arsenic	2.7			FM
7440-39-3	Barium	91.6			P
7440-41-7	Beryllium	0.49	B	J	P
7440-43-9	Cadmium	1.0	B		P
7440-70-2	Calcium	2000			P
7440-47-3	Chromium	42.6			P
7440-48-4	Cobalt	8.1	B		P
7440-50-8	Copper	80.8		J	P
7439-89-6	Iron	32300			P
7439-92-1	Lead	153			FM
7439-95-4	Magnesium	2230			P
7439-96-5	Manganese	230			P
7439-97-6	Mercury	0.87		N*J	CV
7440-02-0	Nickel	15.0			P
7440-09-7	Potassium	546	B		P
7782-49-2	Selenium	0.30	B	NWJ	FM
7440-22-4	Silver	0.84	U		P
7440-23-5	Sodium	420	B	E	P
7440-28-0	Thallium	0.14	U	NWJ	FM
7440-62-2	Vanadium	29.0			P
7440-66-6	Zinc	229		EJ	P
	Cyanide	12.3			AS

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: Artifacts:

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

FORM I - IN

11/2/92

Rinsate [illegible]
with MBHK74,
MBHH03, MBDW32,
MBEW47 and [illegible]

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MBFN41

Lab Name: DATACHEM LABORATORIES   Contract: 68-D0-0149

Lab Code: DATAC   Case No.: 18460   SAS No.:   SDG No.: MBDW99

Matrix (soil/water): WATER   Lab Sample ID: CLP10524

Level (low/med): LOW   Date Received: 07/16/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20.0	U		P
7440-36-0	Antimony	42.2	U		P
7440-38-2	Arsenic	1.1	U		FM
7440-39-3	Barium	2.2	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.3	U		P
7440-70-2	Calcium	25.6	U		P
7440-47-3	Chromium	4.4	U		P
7440-48-4	Cobalt	7.8	U		P
7440-50-8	Copper	5.9	B	J	P
7439-89-6	Iron	52.9	B	J	P
7439-92-1	Lead	1.1	U		FM
7439-95-4	Magnesium	26.7	U		P
7439-96-5	Manganese	1.1	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	398	U		P
7782-49-2	Selenium	1.1	U		FM
7440-22-4	Silver	~~3.3~~	~~U~~		P
7440-23-5	Sodium	427	B		P
7440-28-0	Thallium	1.1	U		FM
7440-62-2	Vanadium	3.3	U		P
7440-66-6	Zinc	3.3	U		P
	Cyanide	20.0	U		AS

ICP analytes excluding Cu: ÷1.1115 correction factor

Color Before: COLORLESS   Clarity Before: CLEAR   Texture:

Color After: COLORLESS   Clarity After: CLEAR   Artifacts:

Comments:
THIS SAMPLE WAS PREPARED USING MICROWAVE DIGESTION FOR ICP ANALYSIS.

6

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MBHH03

Lab Name: DATACHEM LABORATORIES Contract: 68-D0-0149

Lab Code: DATAC Case No.: 18460 SAS No.: SDG No.: MBDW99

Matrix (soil/water): SOIL Lab Sample ID: CLP10525

Level (low/med): LOW Date Received: 07/16/92

% Solids: 61.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2020			P
7440-36-0	Antimony	12.4	U	N J	P
7440-38-2	Arsenic	0.90	B		FM
7440-39-3	Barium	33.2	B		P
7440-41-7	Beryllium	0.33	U		P
7440-43-9	Cadmium	0.98	U		P
7440-70-2	Calcium	1290	B		P
7440-47-3	Chromium	14.3		J	P
7440-48-4	Cobalt	2.5	B		P
7440-50-8	Copper	20.2		J	P
7439-89-6	Iron	4700			P
7439-92-1	Lead	105			FM
7439-95-4	Magnesium	936	B		P
7439-96-5	Manganese	41.5			P
7439-97-6	Mercury	0.22		N* J	CV
7440-02-0	Nickel	6.2	B		P
7440-09-7	Potassium	241	B		P
7782-49-2	Selenium	0.16	U	N J	FM
7440-22-4	Silver	0.98	U		P
7440-23-5	Sodium	752	B	E	P
7440-28-0	Thallium	0.16	U	NW J	FM
7440-62-2	Vanadium	12.2	B		P
7440-66-6	Zinc	54.1		E J	P
	Cyanide	10.8			AS

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: Artifacts:

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

7

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MBHK74

Lab Name: DATACHEM LABORATORIES   Contract: 68-D0-0149

Lab Code: DATAC   Case No.: 18460   SAS No.:   SDG No.: MBDW99

Matrix (soil/water): SOIL   Lab Sample ID: CLP10526

Level (low/med): LOW   Date Received: 07/16/92

% Solids: 95.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7840			P
7440-36-0	Antimony	7.9	U	N J	P
7440-38-2	Arsenic	1.8			FM
7440-39-3	Barium	68.7			P
7440-41-7	Beryllium	0.21	U		P
7440-43-9	Cadmium	0.63	U		P
7440-70-2	Calcium	4330			P
7440-47-3	Chromium	37.2			P
7440-48-4	Cobalt	9.3	B		P
7440-50-8	Copper	45.3			P
7439-89-6	Iron	16900			P
7439-92-1	Lead	106			FM
7439-95-4	Magnesium	4120			P
7439-96-5	Manganese	260			P
7439-97-6	Mercury	0.54		N* J	CV
7440-02-0	Nickel	12.1			P
7440-09-7	Potassium	533	B		P
7782-49-2	Selenium	0.10	U	NW J	FM
7440-22-4	Silver	0.63	U		P
7440-23-5	Sodium	239	B	E	P
7440-28-0	Thallium	0.10	U	NW J	FM
7440-62-2	Vanadium	35.3			P
7440-66-6	Zinc	70.3		E J	P
	Cyanide	6.3			AS

Color Before: BROWN   Clarity Before: Texture: FINE

Color After: COLORLESS   Clarity After: Artifacts:

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

FORM I - IN

DP 9/1/92

Bew ... with MEHH7?, MBHH02, MBDW..., MBER47, ...

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MBHQ94

Lab Name: DATACHEM LABORATORIES Contract: 68-D0-0149

Lab Code: DATAC Case No.: 18460 SAS No.: SDG No.: MBDW99

Matrix (soil/water): WATER Lab Sample ID: CLP10527

Level (low/med): LOW Date Received: 07/16/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20.0	U		P
7440-36-0	Antimony	42.2	U		P
7440-38-2	Arsenic	1.1	U		FM
7440-39-3	Barium	2.2	U		P
7440-41-7	Beryllium	1.1	U		P
7440-43-9	Cadmium	3.3	U		P
7440-70-2	Calcium	25.6	U		P
7440-47-3	Chromium	4.4	U		P
7440-48-4	Cobalt	7.8	U		P
7440-50-8	Copper	~~15.1~~	~~B~~		P
7439-89-6	Iron	53.6	B	J	P
7439-92-1	Lead	1.1	U		FM
7439-95-4	Magnesium	26.7	U		P
7439-96-5	Manganese	1.5	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	25.8	B		P
7440-09-7	Potassium	398	U		P
7782-49-2	Selenium	1.1	U		FM
7440-22-4	Silver	~~3.3~~	~~U~~		P
7440-23-5	Sodium	349	B		P
7440-28-0	Thallium	1.1	U		FM
7440-62-2	Vanadium	3.3	U		P
7440-66-6	Zinc	3.3	U		P
	Cyanide	20.0	U		AS

ICP analytes excluding Cu's ~ 1.1115 Correction Factor ?

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
THIS SAMPLE WAS PREPARED USING MICROWAVE DIGESTION FOR ICP ANALYSIS.

FORM I - IN

REFERENCE NO. 13

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

HACKENSACK MEADOWLANDS DISTRICT, NEW JERSEY
BERGEN AND HUDSON COUNTIES

PANEL 3 OF 10

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
340570 0003 A

EFFECTIVE DATE:
DECEMBER 15, 1982

Federal Emergency Management Agency

KEY TO MAP

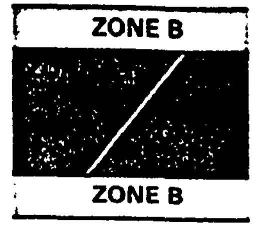
500-Year Flood Boundary

100-Year Flood Boundary

Zone Designations*

100-Year Flood Boundary

500-Year Flood Boundary



Base Flood Elevation Line With Elevation In Feet**	~~~513~~~
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	— — —
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
OCTOBER 8, 1976

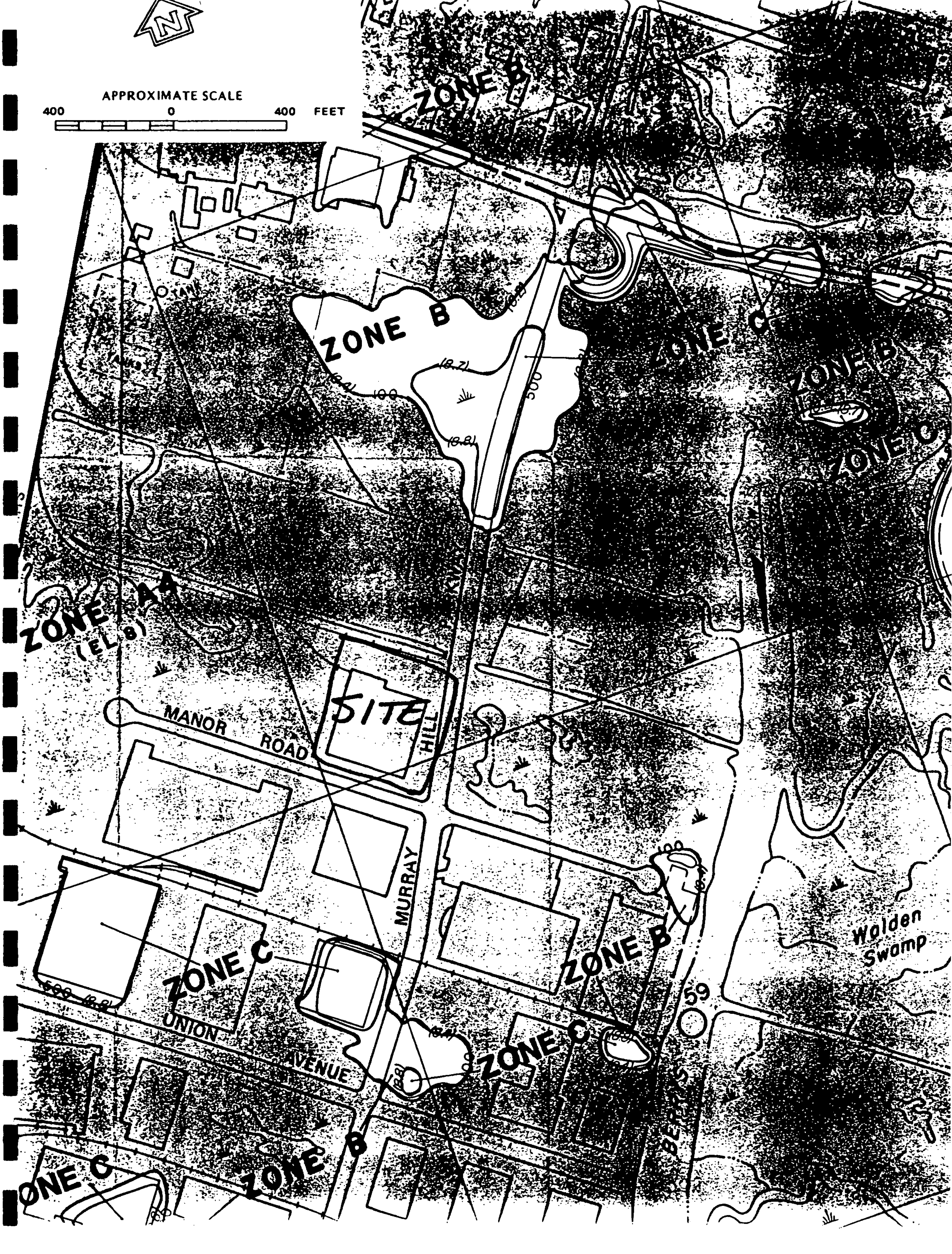
FLOOD HAZARD BOUNDARY MAP REVISIONS:

FLOOD INSURANCE RATE MAP EFFECTIVE:
DECEMBER 15, 1982

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.


N
APPROXIMATE SCALE
400
0
400
FEET
ZONE B
ZONE B
ZONE C
ZONE B
ZONE C
ZONE AA
(EL 8)
MANOR
ROAD
SITE
HILL
MURRAY
ZONE C
ZONE B
UNION
AVENUE
ZONE C
59
BERKS
Walden
Swamp
ZONE B
ZONE C

REFERENCE NO. 14

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9104-08	7/23/91	1405

DISTRIBUTION:

Newark Housing Authority Property

BETWEEN:	OF:	PHONE:
Bill Anders, Fishery Biologist	NJDEP Div. of Fish, Game, Shellfisheries	609 748-2020

AND: David Florin (NUS)

DISCUSSION:

Contacted Div. of Fish, Game, Shellfisheries to obtain information on the fisheries of the Newark Bay and surrounding waterways. Mr Anders informed me that at present there is a ban on the sale and consumption of Stripped Bass, Blue Crab, and American Eel caught in Newark Bay. This ban extends to all tributaries of Newark Bay such as the Kill Van Kull, Arthur Kill. The entire tidal portions of the Passaic and Hackensack rivers have a ban on the sale and consumption of all fish species. The ban is due to high levels of PCB's and dioxin found in the fish. Mr Anders stated that Newark Bay is used as

ACTION ITEMS:

a recreational fishery, but no commercial fishing. All waters in the Newark Bay complex are brackish except for the Passaic which is somewhat fresher.

REFERENCE NO. 15

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9011-18	1/4/~~90~~ 91	1500

DISTRIBUTION:

- MARIO'S SERVICE INC FILE

BETWEEN:	OF:	PHONE:
BILL NIERSTEDT/ED CONSAVIC	Hackensack Meadowlands Develp. Comm.	(201) 460-1700

AND: RICHARD SETTINO (NUS)

DISCUSSION:

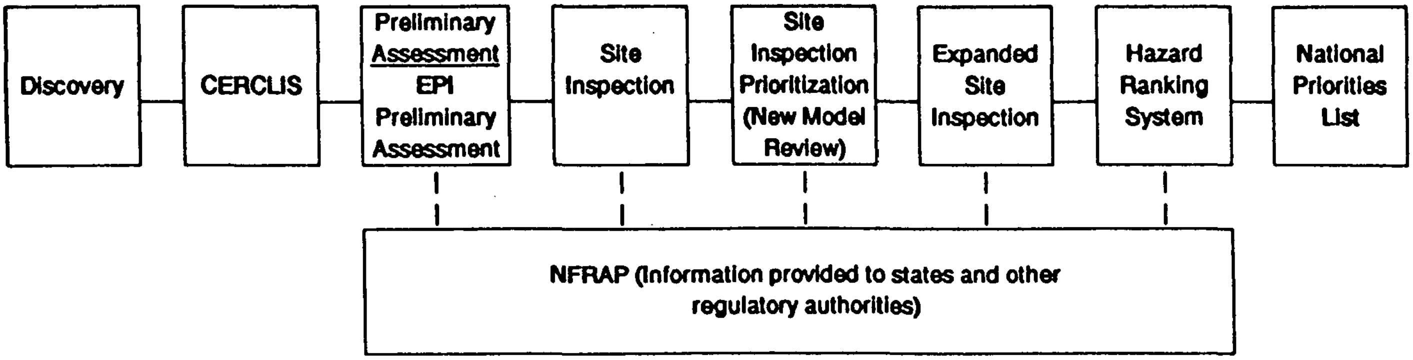
I called to ask BN about Berrys Creek and the Hackensack River. He confirmed that no intakes exist on the river south of Berrys Creek + none exist on the Creek itself. He then transferred me to EC who told me that baitfish and crabs are caught in the Hackensack. His personal observation is that the river is rarely used for fishing. He said the creek is not used at all. He was unsure of flow rate for either but he gave me a tidal range of 5.52 feet in 24 hours. He said he would send me two reports; one containing fishery data and one that may aid in stream flow rate information.

ACTION ITEMS:

RS 1/4/91

ATTACHMENT 2

SUPERFUND SITE ASSESSMENT PROGRAM



SITE ASSESSMENT REPORTS

1. PRELIMINARY ASSESSMENT
   * Quick Review of Readily Accessible Records and Reports
   * Undertaken to Determine the Existence of a Problem and the Need for Further Action at a Site by Characterizing:
     - Magnitude of the Hazard
     - Source and Nature of the Release or Potential Release
     - Identification of Targets
   * Does Not Include Sample Collection
2. SITE INSPECTION
   * The Purpose of the Site Inspection is to:
     - Further Define and Characterize the Problem
     - Provide Data for the Hazard Ranking System (HRS) Scoring and Compute Initial Score
     - Identification of Targets
     - Determine the Necessity of Further Action
   * The Site Inspection Involves an On-Site Visit and Sampling (10+/- Samples)
   * A Site Inspection is not an Extent of Contamination Study
3. SITE INSPECTION PRIORITIZATION
   * Quick Review of Readily Accessible Records and Reports
   * Undertaken to Determine the Validity and Update Background Conditions Under the New HRS Model, and the Need for Further Action at a Site by Characterizing:
     - Magnitude of the Hazard
     - Source and Nature of the Release or Potential Release
   * Included On-Site Visits or Sample Collection as needed
     - Analyze Samples/Limited Analytical Resources
     - Account for Significant Safety Hazards On-Site
4. EXPANDED SITE INSPECTION

   A Follow-Up Inspection May Be Recommended After the SI To:
   * Gather Additional Data Necessary to Strengthen or Substantiate the Initial HRS Score
     - Geophysical Surveys
     - Installation of Groundwater Monitoring Wells
     - Additional Sampling

Review of Analytical Data

If previous analytical data are available, they should be reviewed for information which supports the design of the sampling and analysis program, tests site hypotheses, and documents the site score. The SI investigator should review all previous analytical data. While analytical data collected for other purposes may not meet SI objectives, site-specific analytical data are generally helpful in better understanding the nature of the problem at the site, regardless of data sources or data quality. The depth of the review depends on the overall quality and quantity of data, the intended use of the data, and whether they are representative of current site conditions and comparable to SI data. Determining whether available data can be applied as SI-generated data requires the professional judgement of an experienced reviewer. Both validated and non-validated analytical data may be available. Previous SI data will be validated and of CLP-quality. Non-validated data may contain false positives and false negatives, as well as quantitation, transcription, and calculation errors. If data of unknown or questionable quality are used for decision-making, the investigator should review all available information to assess the level of certainty associated with the data. If these data are used for HRS documentation, data validation will be necessary. The investigator should be able to determine the general quality of the data set by reviewing QC data for evaluation under the Superfund Program.